

Exhibit B



OZONE LEVEL TESTING INVOLVING USE OF A SOCLEAN 2 WITH A DREAMSTATION 1

EXPERT REBUTTAL REPORT

Issue Date: April 29, 2025

Litigation Between SoClean and Philips

Prepared for:
BAKER BOTTS LLP AND SULLIVAN AND CROMWELL LLP
on behalf of:
Philips Parties

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1 INTRODUCTION

BakerRisk® was retained by Baker Botts LLP and Sullivan and Cromwell LLP (Counsel) to perform testing in response to an expert report submitted by SoClean. BakerRisk performed testing of ozone levels in DreamStation 1 Continuous Positive Airway Pressure (CPAP) machines before, during and after the use of a SoClean 2 machine to evaluate certain statements made by Dr. Brad Olsen, as discussed below. This report describes the tests that were performed, and the results obtained from these tests.

BakerRisk has made every reasonable effort to perform the work reflected in this report in a manner consistent with high professional standards. BakerRisk reserves the right to modify or supplement this report if new information becomes available.

2 BACKGROUND OF REBUTTAL TESTING

Dr. Brad Olsen makes a number of assertions in his expert report, including the following:¹

- Dr. Olsen describes various tests performed by, or at the direction of Philips, in which he claims the sound abatement foam was exposed to excess ozone concentration levels from a SoClean 2, although Dr. Olsen never identifies the concentration levels to which the foam was exposed in what he described as a “real-world scenario,” or a “real-world configuration.” For instance, on page 75 of his report, he writes with respect to a Phillips test: “Consequently, the foam samples received direct exposure to ozone at concentrations and for durations that are likely much higher than a typical real-world configuration in the field.”
- With respect to ozone cycling tests as part of the PSN analysis in early 2021, Dr. Olsen claims that Philips engineers did not connect the SoClean 2 to the DreamStation 1 consistent with the SoClean 2 User Manual. In particular, Dr. Olsen writes on page 58 of his report: “During the ozone cycling, it appears that Philips engineers ‘slid[] the SC tubing all the way into the blower box . . . [g]iving direct exposure deep inside the unit.’ It also appears that Philips removed water from the reservoir for CPAP devices with a humidifier.”
- With respect to a variety of Philips’ tests, Dr. Olsen criticizes their “accelerated” nature, including the fact that SoClean 2 ozone cycles were run more than once during certain days of the testing. Again, Dr. Olsen claims Philips tests were not run in what he describes as the “real-world scenario” or the “real-world configuration.” For instance, on pages 66 to 68 of his report, Dr. Olsen criticizes one Philips test because it involved four ozone cleaning cycles in one day, stating that “[t]he screening experiments had no resemblance to ‘typical use’ in a real-world setting, where a SoClean device would be connected to CPAP machine and run at most once per day.” In that test, as with other Philips tests (e.g., Olsen report at 57, 79), there was a two-hour dwell time between ozone cycles to allow the ozone to dissipate.

¹ Brad Olsen, Ph.D. Expert Report., March 24, 2005

3 TEST PURPOSE

The purpose of the test program described in this report was to evaluate statements made by Dr. Olsen. BakerRisk first documented the internal geometry and flow paths among the SoClean 2, DreamStation 1 CPAP machine, breathing hose, mask, and SoClean 2 chamber. The testing measured ozone levels in a DreamStation 1 (Figure 1) that was connected to a SoClean 2 (Figure 2), which generates ozone for claimed disinfection purposes. Ozone from the SoClean 2 was delivered to the DreamStation 1 by a SoClean black rubber hose and a black plastic adapter that attaches to the DreamStation 1, either directly or to the DreamStation 1's humidifier. For tests that involved a humidifier (Figure 2), the adapter also inserts a section of black hose (injection hose) into the reservoir of the humidifier, which was cut in accordance with the SoClean 2 User Manual. The injection hose was cut about 1/8-inch short of touching the bottom of the humidifier water reservoir. For the configuration that did not involve a humidifier (Figure 3), certain tests were run with a cut injection hose and certain tests were run without the injection hose altogether, which is consistent with the SoClean 2 User Manual.

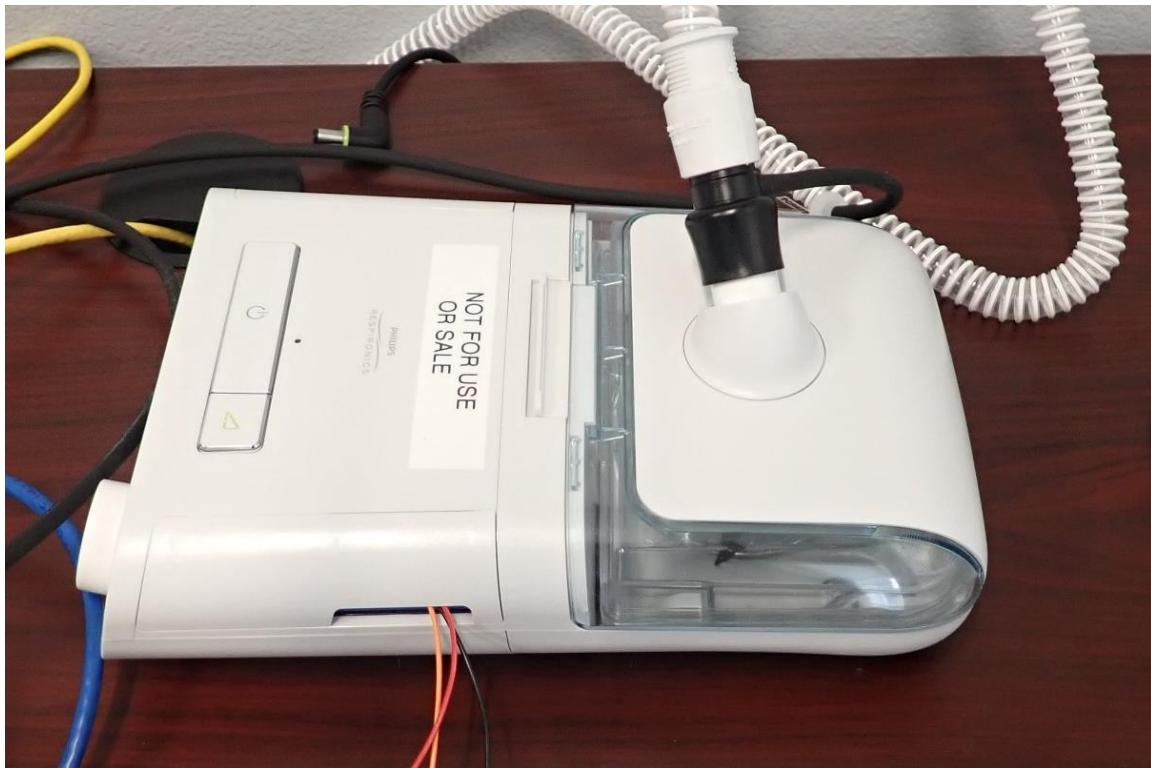


Figure 1. Philips DreamStation 1

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Figure 2. SoClean 2 Connected to Philips DreamStation 1, with Humidifier



Figure 3. SoClean 2 Connected to Philips DreamStation 1, without Humidifier

The SoClean 2 machine operates when the CPAP is not in use. The SoClean 2 User Manual states that it is “designed to safely contain ozone within the system and has a catalyst Cartridge Filter inside the Disinfecting Chamber to convert ozone back to oxygen.”²

The SoClean 2 has an automated disinfecting cycle that can be operated at a pre-programmed time of day. A disinfecting cycle can also be initiated by pressing the manual start button. While there are other settings for cycle length, the default disinfecting cycle length is 7 minutes.³ After completing the cycle, another disinfecting cycle cannot be initiated for a period of 2 hours.⁴ This waiting period is referred to as the “Dwell Time.”

4 TEST SETUP

The tests utilized two new Philips DreamStation 1 and two new SoClean 2 machines. Ozone sensors were inserted into the CPAP blower chamber by disassembling the CPAP outer shell, removing four screws, removing the top cover, and fitting the ozone sensor inside the blower chamber. Figure 4 shows a blower chamber opened for insertion of an ozone sensor.



Figure 4. DreamStation 1 Opened for Insertion of Ozone Sensor

² SoClean_B2B_00009438 (SoClean 2 User Manual) at p. 23.

³ SoClean_B2B_00009438 (SoClean 2 User Manual) at p. 12.

⁴ SoClean_B2B_00009438 (SoClean 2 User Manual) at p. 22.

SPEC Sensors ozone sensors model ULPSM-03 968-0460 were used for tests 1 through 6. These sensors are accurate within a range of 0 to 20 ppm, and provide an output up to about 55 ppm. The ozone sensors were placed next to the blower in Setup A, as shown in Figure 5.

Setup B involved placing an ozone sensor beneath the blower to get a measurement closer to the blower inlet. A part of an internal wall of the blower chamber was removed to fit the ozone sensor in the bottom of the chamber. The portion of the internal wall that was cut is outlined in Figure 6 before cutting. The sensor fitted in the channel is shown in Figure 7. Removal of the piece of the plastic wall did not affect the flow of ozone through the chamber since the remaining portion of the passage was the only path for the ozone flow to exit the chamber.

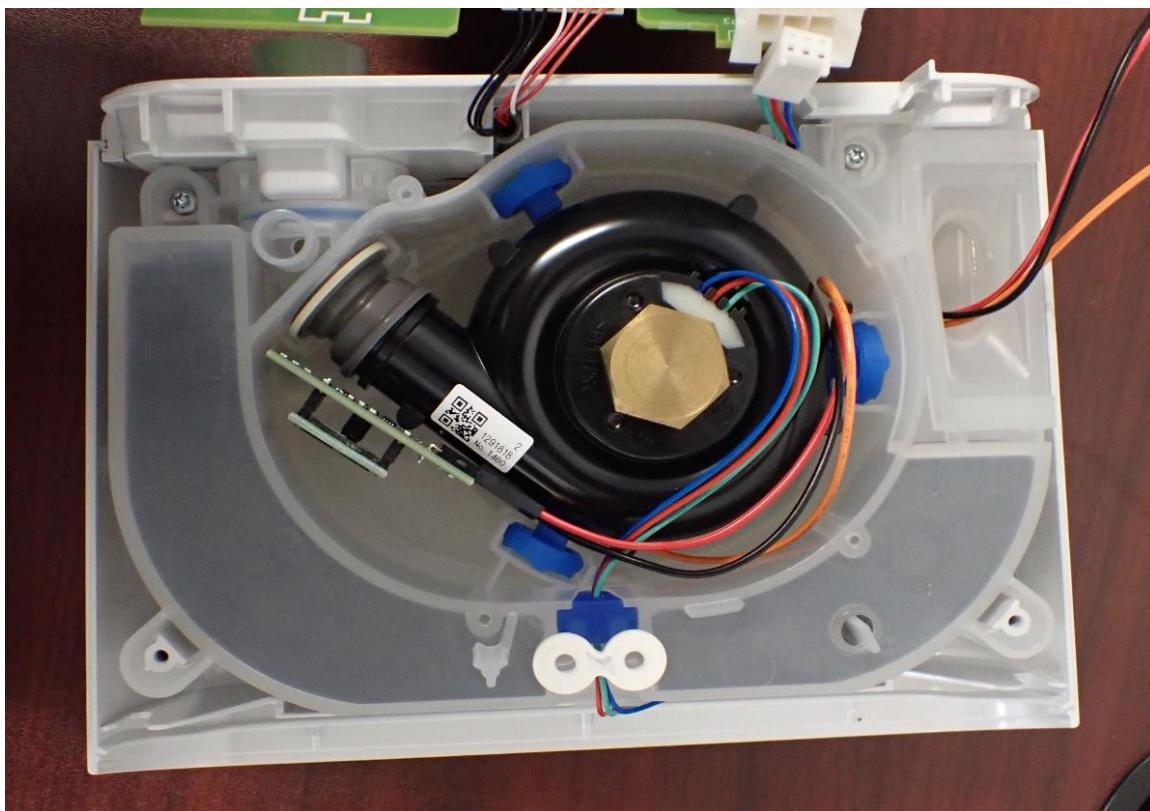


Figure 5. SPEC Ozone Sensor Installed in DreamStation 1 Beside Blower in Setup A

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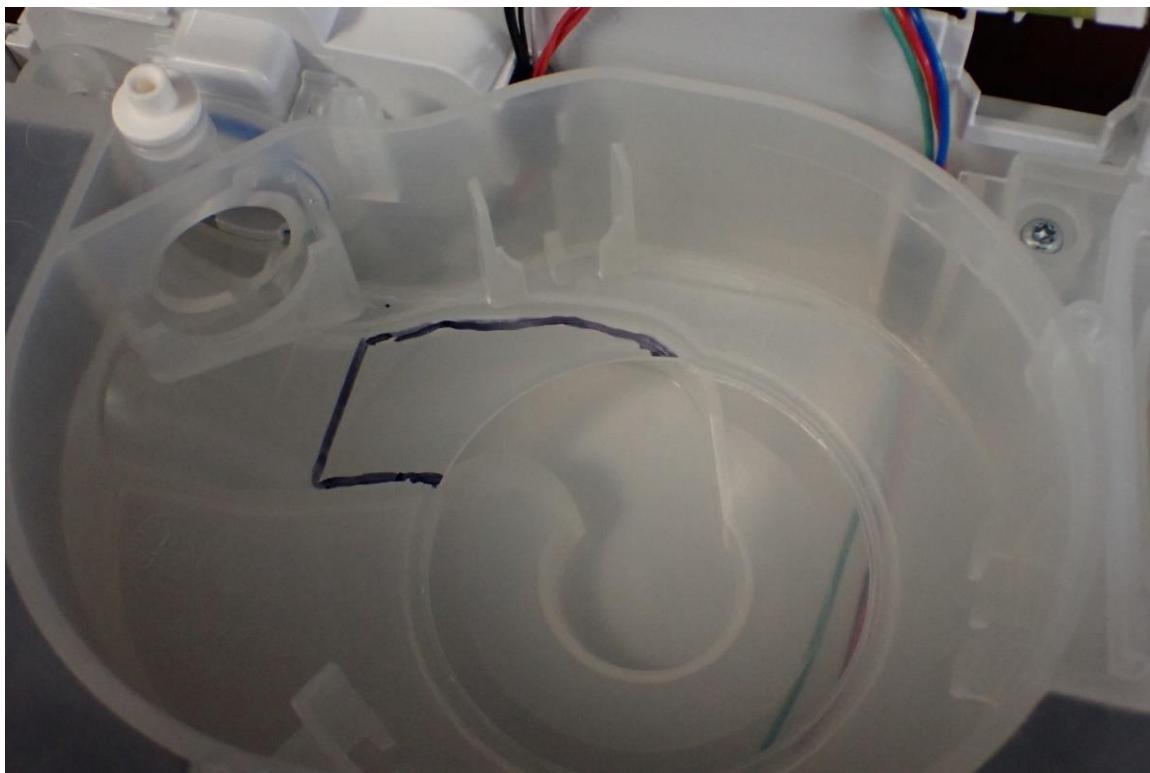


Figure 6. Outline of Internal Wall Removed for Ozone Sensor Placement in Setup B

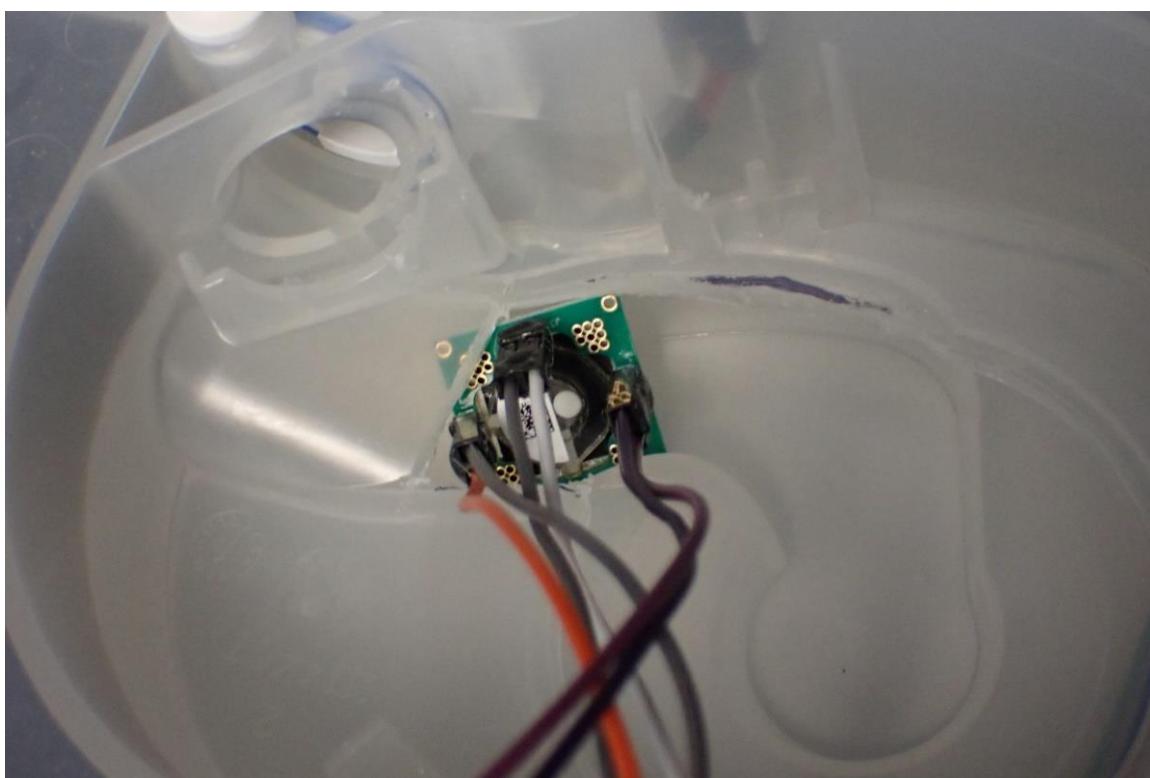


Figure 7. SPEC Ozone Sensor Fitted in Bottom Channel in Setup B

All tests using Setups A and B exceeded the 20-ppm measurement range of the SPEC Sensors ozone sensors.

Setups C and D were the same as Setup A, except that MikroElektronika 1000 ppm sensors (MQ1310) were installed in place of the SPEC sensors. Tests 7 through 32 were run with Setups C and D. Per the manufacturer, the 1000 ppm sensors are not designed to accurately measure the concentration. Rather, the 1000 ppm sensors are designed to detect the presence of ozone and are capable of operating in ozone environments up to 1000 ppm without damaging the sensor. The MQ1310 sensor would not fit under the blower; as a result, Setups C and D had the same sensor placement as Setup A, beside the blower but with the MQ1310 sensor, as shown in Figure 8. Setups C and D were the same, but on the two different pairs of DreamStation 1 and SoClean 2 machines.

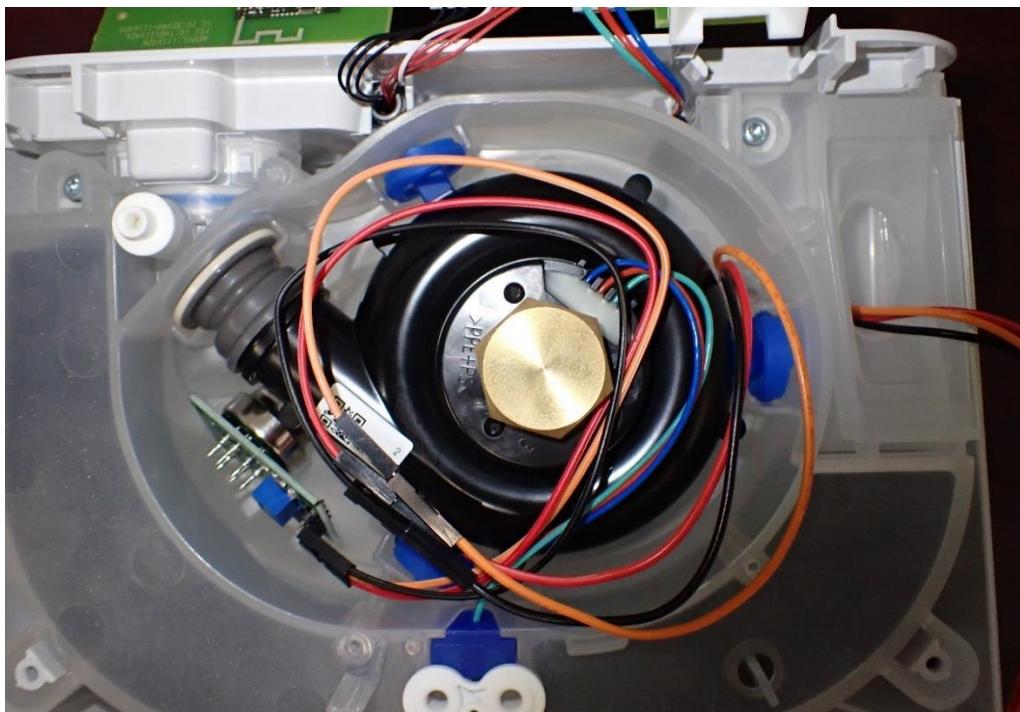


Figure 8. Ozone Sensor Placed beside the Blower in Setups C and D

No holes were cut or drilled in the exterior of the blower chamber for testing. A hole was drilled to pass ozone sensor cables through an internal chamber wall to the to the air inlet port. The hole was sealed with silicon sealant as shown in Figure 9. A hole was cut in the inlet filter to have cables exit the DreamStation 1 as shown in Figure 10.

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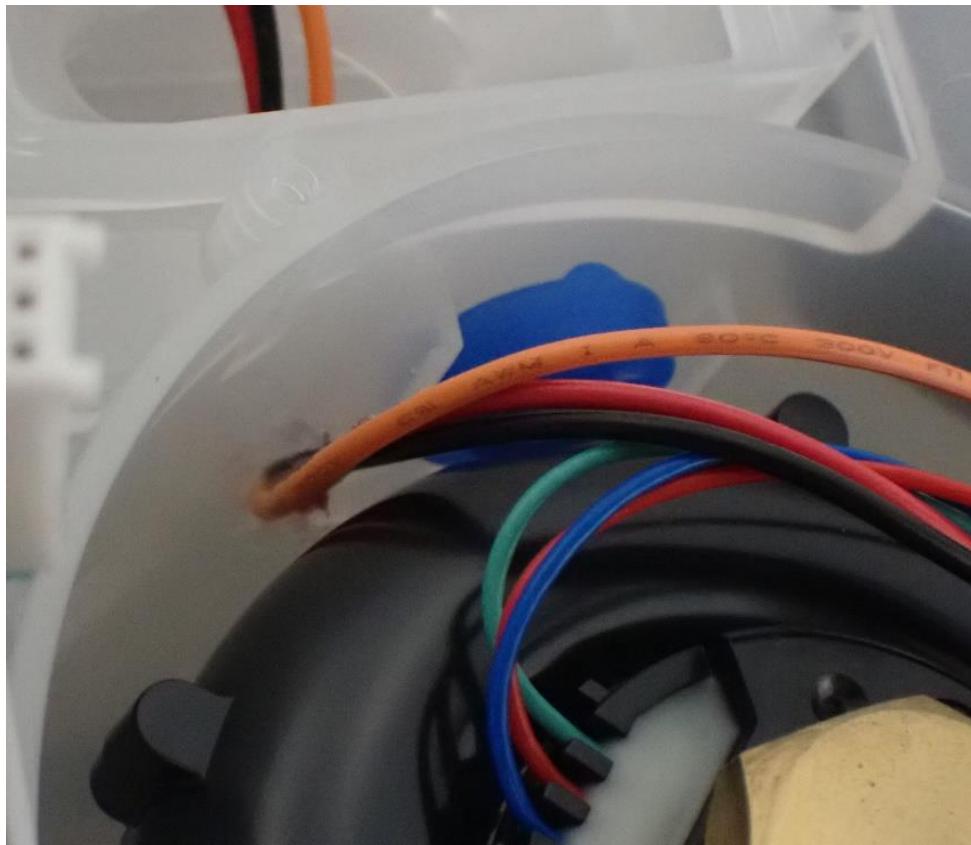


Figure 9. Ozone Sensor Cables Passing through Interior Wall, Sealed with Silicon Sealant

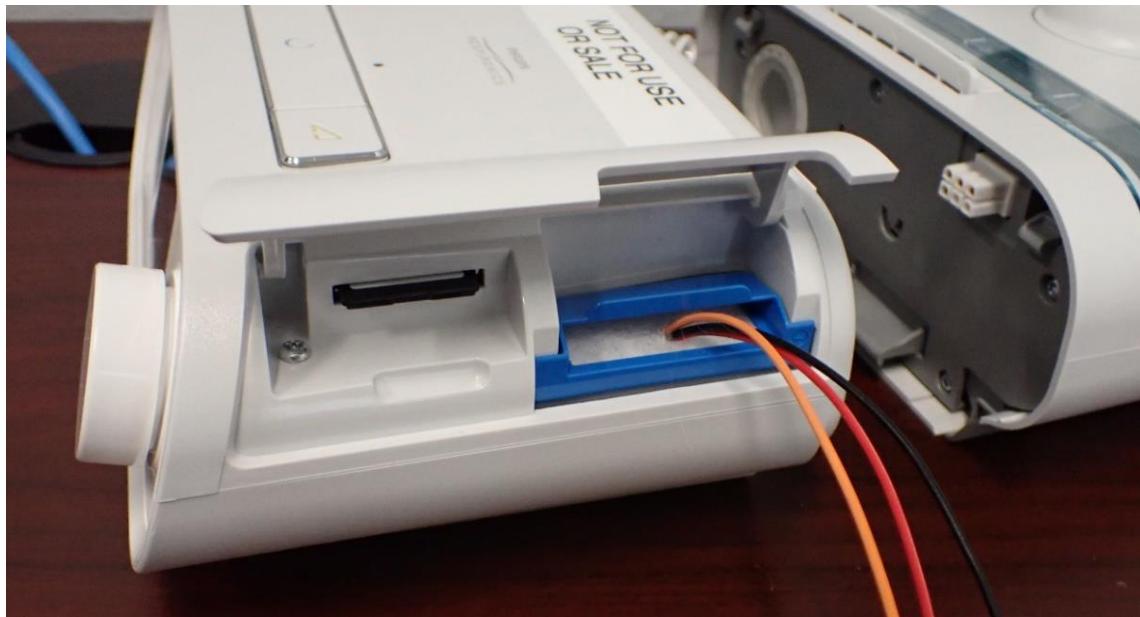
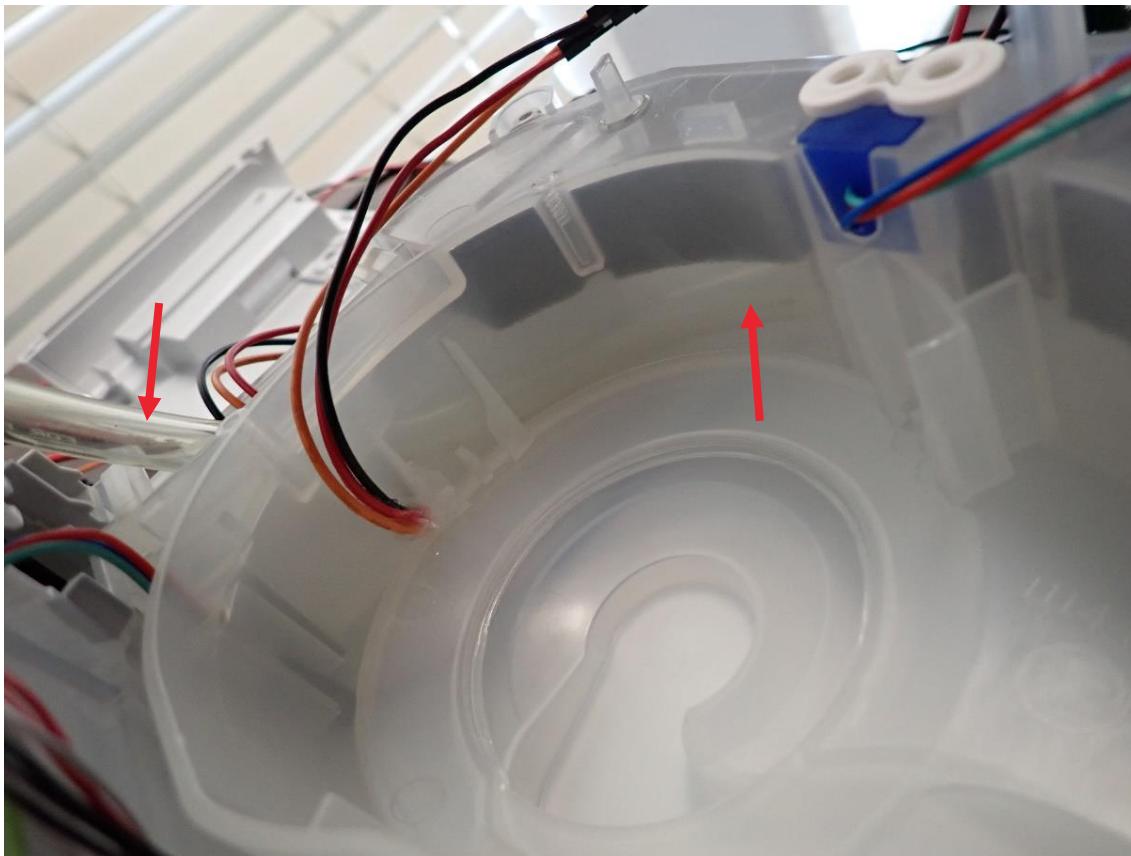


Figure 10. Ozone Sensor Cables Exiting the DreamStation 1 through the Air Inlet Filter

The cables from the ozone sensor were connected to a computer data acquisition system. The signals from the ozone sensors were sampled at 5 Hz throughout the tests, including the 7-minute disinfecting cycle, the 2-hour wait period (Dwell Time), and the post-test air purge (as described below).

A third type of sensor, a handheld Gas Dog model GD200-O3, was also used in Setups C and D during tests 13 to 32. The GD200-O3 sensor had a 2000 ppm measurement range. When the handheld ozone sensor was used, a sample tube was inserted into the device being sampled. For the measurements inside the SoClean 2's disinfecting chamber, a sample tube was inserted and sealed to the side port opposite the port being used for the hose connected to the mask. For the measurements inside the DreamStation 1, the sample tube was inserted through the air filter port into the flow channel until it was up against the flow straightener, approximately halfway around the perimeter of the flow channel, as shown in Figure 11. This placed the end of the sample tube beneath the two pieces of foam and nearly centered between the foam pieces. The sampling tube exited the DreamStation 1 through the air filter, as shown in Figure 12.



**Figure 11. Sampling Tube Inserted into Flow Channel of DreamStation 1
(red arrows point to the sample tube)**

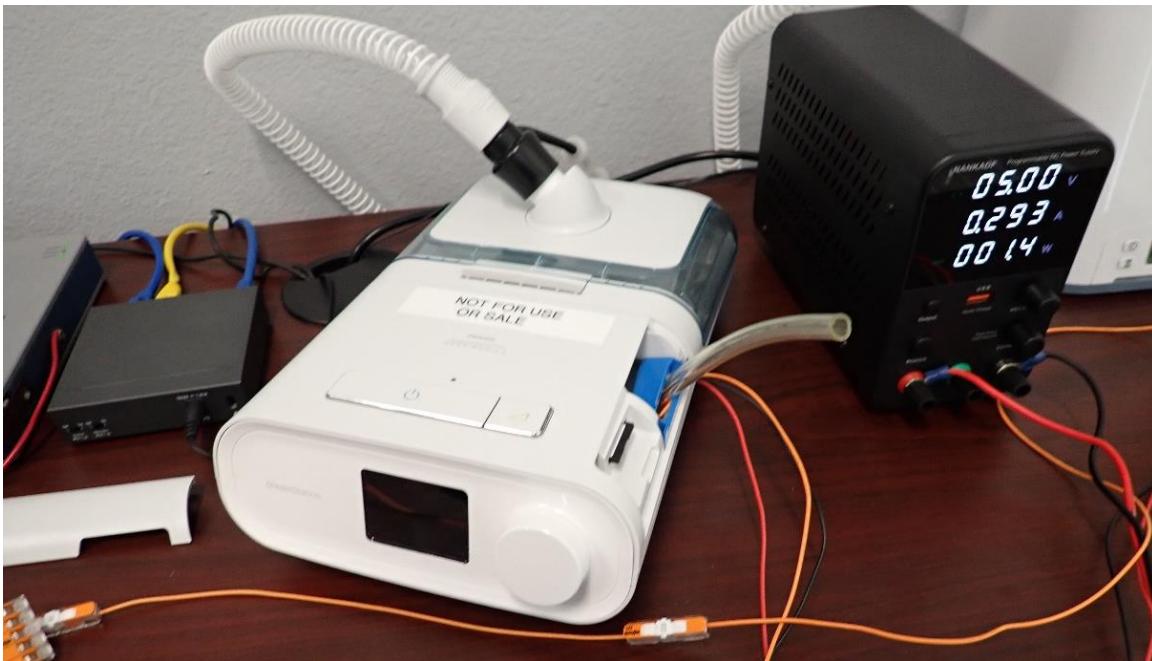


Figure 12. Sampling Tube Exiting DreamStation 1 Through Air Filter

Distilled water was used in the humidifier in tests involving a filled DreamStation 1 humidifier.

A Philips DreamWear Medium Frame mask was attached to the air hose for all tests. The mask was inserted into the SoClean 2's disinfecting chamber as would be normal during use of the SoClean 2.

All tests were performed with ambient relative humidity between 30 and 50% and at ambient room temperature. Relative humidity was measured using a hand-held Fluke 971 meter. Measurements were taken at the beginning of each test.

Ozone concentration was also measured inside the DreamStation 1 during the 2-hour dwell period that followed the 7-minute disinfection period. In all tests, the ozone level went to zero inside the DreamStation 1 before the end of the 2-hour dwell period. Nonetheless, air purges were performed on the CPAP machine between tests (following the conclusion of the 2-hour dwell period) to ensure the removal of any remaining ozone. Room air was blown into the CPAP machine using a small fan. When the humidifier was installed, air was blown into the breathing hose port. When the humidifier was not used, air was blown into the CPAP air outlet port. Ozone level was monitored during the purge to ensure the ozone level was zero before the next test. Purges were performed for 2 minutes. No detectable ozone was observed in any time during a purge process.

Tests were initiated by pressing the "Manual" button on each SoClean 2 and syncing to a data acquisition system in LabVIEW. DreamStation 1 machines were not running or powered on during disinfecting cycles.

5 TEST MATRIX

Two DreamStation 1 and two SoClean 2 machines were tested. The same DreamStation 1 was paired with the same SoClean 2 for all tests. The machine combinations were tested in five modes as shown in Table 1. With the setup and mode combinations, repeat tests with different ozone sensors, and sensor placement combinations, 32 different tests were performed.

Table 1. Test Modes

Mode	DreamStation 1 Configuration	SoClean 2 Connection	Humidifier Water Level
1	Without a humidifier	To air outlet port from DreamStation 1	Not applicable
2	With humidifier	To outlet from DreamStation 1 humidifier	Empty
3	With humidifier		Filled to the identified max level
4	With humidifier, water tank removed		Not applicable
5	Without a humidifier	To air outlet port from DreamStation 1 Injection hose removed	Not applicable

Tests 1 through 6 utilized the SPEC 0 to 20 ppm sensors and evaluated the various setup and mode combinations. Since the ozone measurements exceeded the 20-ppm range of the SPEC sensors in each test, the MQ1310 sensors were utilized in tests 7 through 32. The calibrated GD200-03 sensor was used in tests 13 to 32 in addition to the MQ1310 sensors.

Table 2 provides the expanded setup, mode, DreamStation 1 configuration, SoClean 2 connection, and humidifier water level for the entire test matrix.

Table 2. Test Matrix

Setup	Mode	DreamStation 1 Configuration	SoClean 2 Connection	Humidifier Water Level	Test
A	1	Without a humidifier	To air outlet port from DreamStation 1	N/A	1
B	1	Without a humidifier	To air outlet port from DreamStation 1	N/A	2
A	2	With humidifier	To outlet from DreamStation 1 humidifier	Empty	3
B	2	With humidifier	To outlet from DreamStation 1 humidifier	Empty	4
A	3	With humidifier	To outlet from DreamStation 1 humidifier	Filled	5
B	3	With humidifier	To outlet from DreamStation 1 humidifier	Filled	6
C	1	Without a humidifier	To air outlet port from DreamStation 1	N/A	7
D	1	Without a humidifier	To air outlet port from DreamStation 1	N/A	8
C	2	With humidifier	To outlet from DreamStation 1 humidifier	Empty	9
D	2	With humidifier	To outlet from DreamStation 1 humidifier	Empty	10
C	3	With humidifier	To outlet from DreamStation 1 humidifier	Filled	11
D	3	With humidifier	To outlet from DreamStation 1 humidifier	Filled	12
C	3	With humidifier	To outlet from DreamStation 1 humidifier	Filled	13
C	3	With humidifier	To outlet from DreamStation 1 humidifier	Filled	14
C	3	With humidifier	To outlet from DreamStation 1 humidifier	Filled	15
C	3	With humidifier	To outlet from DreamStation 1 humidifier	Filled	16
C	3	With humidifier	To outlet from DreamStation 1 humidifier	Filled	17
C	3	With humidifier	To outlet from DreamStation 1 humidifier	Filled	18
C	2	With humidifier	To outlet from DreamStation 1 humidifier	Empty	19
C	2	With humidifier	To outlet from DreamStation 1 humidifier	Empty	20
C	4	With humidifier water tank removed	To outlet from DreamStation 1 humidifier	N/A	21
C	4	With humidifier, water tank removed	To outlet from DreamStation 1 humidifier	N/A	22
C	1	Without a humidifier	To air outlet port from DreamStation 1	N/A	23
C	1	Without a humidifier	To air outlet port from DreamStation 1	N/A	24
D	1	Without a humidifier	To air outlet port from DreamStation 1	N/A	25
D	1	Without a humidifier	To air outlet port from DreamStation 1	N/A	26
D	3	With humidifier	To outlet from DreamStation 1 humidifier	Filled	27
D	3	With humidifier	To outlet from DreamStation 1 humidifier	Filled	28
D	2	With humidifier	To outlet from DreamStation 1 humidifier	Empty	29
D	2	With humidifier	To outlet from DreamStation 1 humidifier	Empty	30
D	5	Without a humidifier, injection tube removed	To air outlet port from DreamStation 1	N/A	31
D	5	Without a humidifier, injection tube removed	To air outlet port from DreamStation 1	N/A	32

6 TEST RESULTS

Upon commencement of a disinfecting cycle, ozone concentration within the DreamStation 1 increased rapidly in all tests. Ozone was first detected in DreamStation 1s within 30 to 74 seconds in tests 1 to 6 with Setups A and B (see time to exceed 20 ppm in Table 3) with an average of 46 seconds. The SPEC ozone sensors had an output of up to 55 ppm at which point the signals reached the maximum of the sensors and plateaued (clipped). The accuracy of ozone concentrations over 20 ppm is not known, but indicated concentrations were still increasing rapidly during tests when signals clipped. Table 3 provides a summary of the times at which 20 ppm was exceeded and the signal clipped at a reading of 55 ppm.

Table 3. Times of Ozone Concentration Detection and Ozone Decay in DreamStation 1s Using SPEC Ozone Sensors (Test Setups A & B)

Test No.	Setup, Mode	DreamStation Config.	SoClean 2 Connect.	Humid. Water Level	Time (seconds) to Exceed		Time (seconds) After Disinfect. to Decay to		
					20 ppm	55 ppm	55 ppm	20 ppm	0 ppm
1	A, 1	Without humid.	DS outlet	N/A	30	55	989	1024	2029
2	B, 1	Without humid.	DS outlet	N/A	38	40	1091	1133	2029
3	A, 2	With humid.	Humid. Port	Empty	74	120	1057	1286	3221
4	B, 2	With humid.	Humid. Port	Empty	36	49	1051	1088	3221
5	A, 3	With humid.	Humid. Port	Filled	58	87	1095	1255	2407
6	B, 3	With humid.	Humid. Port	Filled	41	47	906	939	2407

Ozone persisted for a period of time in the DreamStation 1 after all of the disinfecting cycles. The time after the disinfection period at which ozone concentrations decayed to be back in range of the ozone sensor (indicated 55 ppm), 20 ppm, and zero ppm are provided in Table 3. As can be seen, it took 939 to 1286 seconds, averaging 1121 seconds (18.7 minutes), to decay below 20 ppm ozone, and 2029 to 3221 seconds to decay 0 ppm ozone, averaging 2552 seconds (42.5 minutes).

Setups C and D used the MQ1310 sensors. Results were similar to Setups A and B in that ozone concentrations rose rapidly after initiation of the disinfecting cycle, as shown in Table 4. During tests 7 to 32, the time for ozone to reach a DreamStation 1 ranged from 2 to 64 seconds with an average of 13 seconds. The average time after the disinfection period for the ozone concentration to return to zero after the end of the disinfecting cycle was 2671 seconds (44.5 minutes) with a range of 498 seconds (8.3 minutes) to 6650 seconds (110.8 minutes).

It took considerably longer for ozone to reach the SoClean 2 chamber than the DreamStation 1. A MQ1310 sensor was placed in the SoClean 2 chamber during tests 13 to 32. The time for ozone to be detected in the SoClean 2 chamber ranged from 73 to 550 seconds as shown in Table 4, averaging 232 seconds (3.9 minutes).

Table 4. Times of Ozone Concentration Detection and Ozone Decay in DreamStation 1s Using MQ1310 Ozone Sensors (Test Setups C & D)

Test No.	Setup, Mode	Dream-Station Config.	SoClean 2 Connect.	Humid. Water Level	DreamStation		SoClean 2	
					Time to detect Ozone (s)	Time After Disinfect. to Decay to Zero (s)	Time to detect Ozone (s)	Time After Disinfect. to Decay to Zero (s)
7	C, 1	Without humid.	DS outlet	N/A	12	1147	-	-
8	D, 1	Without humid.	DS outlet	N/A	64	1116	-	-
9	C, 2	With humid.	Humid. Port	Empty	21	1204	-	-
10	D, 2	With humid.	Humid. Port	Empty	34	1206	-	-
11	C, 3	With humid.	Humid. Port	Filled	17	868	-	-
12	D, 3	With humid.	Humid. Port	Filled	19	730	-	-
13	C,3	With humid.	Humid. Port	Filled	13	549	90	1531
14	C,3	With humid.	Humid. Port	Filled	9	580	79	1636
15	C,3	With humid.	Humid. Port	Filled	10	498	73	1446
16	C,3	With humid.	Humid. Port	Filled	11	669	83	1960
17	C,3	With humid.	Humid. Port	Filled	10	2151	159	3106
18	C,3	With humid.	Humid. Port	Filled	13	2786	142	4173
19	C, 2	With humid.	Humid. Port	Empty	12	2038	153	3997
20	C, 2	With humid.	Humid. Port	Empty	11	4071	150	4071
21	C, 4	Humid. tray removed	Humid. Port	N/A	11	2278	550	2278
22	C, 4	Humid. tray removed	Humid. Port	N/A	8	2588	533	2588
23	C, 1	Without humid.	DS outlet	N/A	3	2663	166	3980
24	C, 1	Without humid.	DS outlet	N/A	3	4504	123	5533
25	D, 1	Without humid.	DS outlet	N/A	9	4343	ND	ND
26	D, 1	Without humid.	DS outlet	N/A	2	4921	415	882
27	D, 3	With humid.	Humid. Port	Filled	4	4073	340	3080
28	D, 3	With humid.	Humid. Port	Filled	6	3380	295	4531
29	D, 2	With humid.	Humid. Port	Empty	10	4598	326	4598
30	D, 2	With humid.	Humid. Port	Empty	11	4110	263	6268
31	D, 5	w/o humid.,w/o injection tube	DS outlet	N/A	5	6650	ND	ND
32	D, 5	w/o humid. w/o injection tube	DS outlet	N/A	4	5731	ND	ND

ND – none detected; w/o - without

Ozone concentration was measured in the SoClean 2 chamber using the handheld GD200-O3 sensor in Tests 13 to 16. Maximum ozone levels in the SoClean 2 chamber ranged from 72 and 95 ppm, as shown in Table 5. The average of the maximum concentration values measured in the SoClean 2 chamber was 82 ppm.

By contrast, measured maximum ozone concentrations in the DreamStation 1 using the handheld GD200-O3 sensor reached 87 to 245 ppm as shown in Table 6, tests 17 to 32. The average of the maximum concentration values measured in the DreamStation 1 was 194 ppm.

Ozone concentrations were still climbing in the DreamStation 1 and SoClean 2 chamber at the end of each 7-minute SoClean 2 disinfecting cycle. As a result, if a user set the cleaning time longer than the default manufacturer setting of 7 minutes, ozone concentrations would likely be higher than measured in these tests, which only employed the default 7-minute disinfecting cycle.

Table 5. Maximum Ozone Levels Measured Inside the SoClean 2 Chamber

Test	Setup, Mode	Dream-Station Config.	SoClean 2 Connect.	Humid. Water Level	Handheld Sensor Use	Max. Ozone (ppm)
13	C, 3	With humid.	Humid. Port	Filled	Last minute	72
14	C, 3	With humid.	Humid. Port	Filled	Continuous	84
15	C, 3	With humid.	Humid. Port	Filled	Continuous	95
16	C, 3	With humid.	Humid. Port	Filled	Continuous	76

Table 6. Maximum Ozone Levels Measured Inside the DreamStation 1

Test	Setup, Mode	DreamStation Config.	SoClean 2 Connection	Humid. Water Level	Handheld Sensor Use	Max. Ozone (ppm)
17	C, 3	With humid.	Humid. Port	Filled	Continuous	183
18	C, 3	With humid.	Humid. Port	Filled	Last minute	151
19	C, 2	With humid.	Humid. Port	Empty	Continuous	188
20	C, 2	With humid.	Humid. Port	Empty	Last minute	153
21	C, 4	Humid. tray removed	Humid. Port	N/A	Continuous	92
22	C, 4	Humid. tray removed	Humid. Port	N/A	Last minute	87
23	C, 1	Without humid.	DS outlet	N/A	Continuous	194
24	C, 1	Without humid.	DS outlet	N/A	Last minute	182
25	D, 1	Without humid.	DS outlet	N/A	Continuous	245
26	D, 1	Without humid.	DS outlet	N/A	Last minute	228
27	D, 3	With humid.	Humid. Port	Filled	Continuous	240
28	D, 3	With humid.	Humid. Port	Filled	Last minute	222
29	D, 2	With humid.	Humid. Port	Empty	Continuous	243
30	D, 2	With humid.	Humid. Port	Empty	Last minute	221
31	D, 5	Without humid.	DS outlet	N/A	Continuous	243
32	D, 5	Without humid.	DS outlet	N/A	Last minute	224

The tests show that the preferential path for ozone flow was into the DreamStation 1, not into the SoClean 2's disinfecting chamber. The average time to detect ozone in the DreamStation 1 was 13 seconds compared to an average of 232 seconds (3.90 minutes) for the SoClean 2 disinfecting chamber. Additionally, the average of the maximum ozone concentrations measured in the DreamStation 1 (Table 6) was 194 ppm compared to 82 ppm in the SoClean 2 disinfecting chamber (Table 5).

Tests run without the humidifier (adapter connected directly to the DreamStation 1 outlet, either with a cut injection hose or with the injection hose removed altogether) had ozone concentrations that were within the range of tests with the humidifier. No significant differences in maximum measured ozone concentrations between the tests with and without the humidifier were discerned from the data.

An additional test, not shown in the test matrix, was run to measure the ozone concentration produced by the SoClean 2. The handheld sensor was connected directly to the SoClean 2 black rubber ozone hose for disinfecting cycles. The measured maximum ozone concentrations for these tests ranged from 305 to 362 ppm.

A separate test was conducted to check the ozone concentration at the DreamStation 1 air inlet port by placing the tip of the handheld GD200-O3 sensor against the filter near the end of the disinfecting period. The measured maximum ozone concentration for the single test was 180 ppm.

Charts with raw ozone sensor voltage and concentration versus time are presented in Appendix A.

7 CONCLUSIONS

Based on the foregoing, I have reached the following conclusions:

- The SoClean 2 is not a closed system. There were two open pathways for ozone from a SoClean 2 to flow from the adapter.
 - Ozone can flow from the adapter through the hose and attached mask into the SoClean 2 Disinfecting Chamber.
 - Ozone can flow from the adapter into the DreamStation 1, through the internal flow path, and out through the air filter (CPAP air inlet port) to ambient air.
- Both pathways were continuously open, resulting in split ozone flow between the two open pathways.
- Test results clearly showed that ozone preferentially flowed into the DreamStation 1 compared to the SoClean 2 chamber, as evident from the time for ozone to reach each device and the maximum ozone concentration levels in each device.
 - After initiating a disinfecting cycle, ozone reached the DreamStation 1 blower chamber on average in 13 seconds, whereas on average it took 232 seconds (3.9 minutes) for ozone to reach the SoClean 2 chamber.
 - Ozone concentration using a 7-minute disinfecting cycle averaged 194 ppm in a DreamStation 1 blower chamber compared to 82 ppm in a SoClean 2 chamber.
- Water in the humidifier did not make a significant change to ozone levels in a DreamStation 1 compared to tests with a dry humidifier. Also, no significant differences in maximum ozone concentrations were discerned from the data for tests with and without the humidifier, and for tests with the cut injection tube and without an injection tube altogether from the adapter.
- Foam pieces inside the DreamStation 1 were directly exposed to ozone from the SoClean 2 in all tests during the disinfecting period. Maximum measured ozone concentrations ranged from 87 to 245 ppm. The open flow path through the DreamStation 1 caused ozone to flow over the foam pieces for the duration of cleaning. Furthermore, even after the end of a disinfecting cycle, ozone persisted in DreamStation 1 for 45 minutes on average, during which time the foam pieces continue to be exposed to ozone.
- Ozone dissipated in the DreamStation 1 before the conclusion of the two-hour dwell period in all tests. The shortest period during which ozone was measurable in the DreamStation 1 after completion of the disinfecting period was 498 seconds (8.3 minutes), the longest period was 6650 seconds (110.8 minutes), and the average was 3159 seconds (52.7 minutes).
- Ozone that flowed through the DreamStation 1 discharged to atmosphere without being converted to oxygen. The ozone concentration outside of a DreamStation 1 at the air inlet port measured 180 ppm during a disinfecting cycle with a humidifier attached and filled with water.

The Immediately Dangerous to Life or Health (IDLH) concentration for ozone is 5 ppm.⁵ ⁶
The ozone level at the air inlet port in DreamStation 1 where ozone discharged to atmosphere was therefore 36 times the IDLH concentration.

8 EXPERT QUALIFICATIONS AND RATES

The CVs and expert testimony history for Quentin Baker are provided in Appendix A. The current billing rate for Mr. Baker is \$574/hr. Mr. Baker was assisted by Bradley J. Horn, Tyler T. Paschal, and Colby Fraint with setting up tests, conducting tests, and compiling test results.

Dated: April 29, 2025



Quentin A. Baker

⁵ NIOSH, "Ozone, Immediately Dangerous to Life or Health Concentrations (IDLH)," <https://www.cdc.gov/niosh/idlh/10028156.html>, May 1994

⁶ Anon, "Safety Data Sheet for Ozone," Ozone Solutions, chrome-extension://efaidnbmnnibpcajpcglclefindmkaj/https://ozone solutions.com/content/MSDSSafetySheet.pdf, 10/02/2023

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APPENDIX A. CVS AND TESTIMONY EXPERIENCE



QUENTIN A. BAKER, P.E.
Director - Investigation Services
Senior Principal Engineer

M.B.A., University of Texas at San Antonio

B.S., Mechanical Engineering, Texas A&M University

Areas of Practice

Mr. Baker's career has focused on explosion and combustion phenomena. He has conducted numerous R&D projects, hazards analyses, and engineering studies involving airblast effects from a wide variety of explosion sources, blast loads, fragmentation effects, debris throw, blast damage, and personnel injury. Injury prediction and risk analysis have also been the subject of Mr. Baker's research; he has contributed to the development of a building occupant vulnerability model.

Experience

- Mr. Baker's experience with explosion phenomena includes experimentation with high explosives. He conducted an R&D program to develop a distributed explosives system to neutralize landmines, testing the system both on land and in shallow water to investigate blast output and sympathetic detonation of an acceptor charge. He also conducted tests to study shaped charge initiation of cased acceptor charges from long standoffs, with the acceptor charges positioned above ground and buried.
- Researched airblast propagation through openings into buildings and designed and tested passive devices to protect ventilation systems, which resulted in a patented design.
- Contributed to the design of a vapor cloud explosion test apparatus and participated in vapor cloud explosion tests.
- Developed shock tubes to simulate the blast loading from very large explosive charges and vapor cloud explosions. He subsequently tested glass/glazing systems to protect building occupants from glass fragments from vapor cloud explosion threats.
- Worked on numerous facility siting, safety analysis review, consequence analysis, explosion hazard analysis, and blast-resistant structural design projects during which he predicted internal and external blast loads. The blast sources have included high explosives, runaway chemical reactions, dust explosions, electrical arc, vapor clouds, bursting pressure vessels, and propellants. He has predicted fragment size, velocity, and throw for bursting pressure vessels and cased explosives.
- Inspected numerous petrochemical plants, specialty chemical plants, refineries, offshore platform, and other industrial facilities; identified explosion hazards, and developed explosion scenarios. He has conducted facility-wide risk analyses to predict the risk to personnel from potential explosion hazards.
- Investigated over 120 accidental explosions and fires, both domestic and international, to determine the number and magnitude of explosions, their locations on the site, origin of the explosion, and probable causes of initiation of each explosion. These accidents include internal and external vapor cloud explosions at refineries, chemical plants, offshore platforms, oil/gas wells, industrial facilities, and houses; an ammonium-perchlorate plant explosion; an electrical arc in a rail-gun research laboratory; runaway reactions in reactors, pipes, and tanks resulting in vessel burst and fragmentation including an ethylene oxide reactor, a waste products mixing tank, an agricultural products settling tank, ammonium nitrate reactor, a loop reactor, a fertilizer pump, and a pressure relief valve; large power generation boiler explosions; BLEVEs of rail cars and process vessels; and dust explosions in food processing, grain, rubber recycling, foundry, and rubber compounding facilities.
- Designed and conducted tests to evaluate hypotheses during incident investigations and to evaluate functionality or performance of equipment recovered from incident sites. He has developed numerous protocols for inspections and tests of evidence in-situ and in laboratories and facilitated the execution of numerous protocols in cooperation with government and private investigators.
- He has provided incident investigation training to industry and government personnel and has led short course instruction in blast and fragmentation effects.
- Managed a number of projects to develop computer programs to calculate the blast loads on structures from high explosive, vapor cloud explosion, and bursting pressure vessel sources considering ground reflection, Mach stem formation, and receptor structure orientation. He was involved in the development of a computational fluid dynamics model to predict bursting pressure vessel and vapor cloud explosion blast parameters, and with the use of this code, developed blast curves for both classes of explosions.



QUENTIN A. BAKER, P.E.
Director – Investigation Services
Senior Principal Engineer

- Participated on API, NFPA, and ACI standards development committees including API RP-753 and RP-752, NFPA 921, and ACI 370.
- Managed projects and was contributing author for three CCPS books related to blast predictions, facility siting, and incident investigation.

Professional Chronology

Southwest Research Institute, 1978-1987; Baker Engineering and Risk Consultants, Inc., 1987-present

Professional Registrations/Certifications

- Registered Professional Engineer (Texas, Delaware, Iowa, Michigan, North Carolina)
- Certified Fire and Explosion Investigator (CFEI)
- Certified Fire Investigation Instructor (CFII)

Professional Memberships

- American Society of Mechanical Engineers (ASME)
- American Institute of Chemical Engineers (AIChE)
- National Fire Protection Association (NFPA)
- National Association of Fire Investigators (NAFI)
- National/Texas Society of Professional Engineers (NSPE, TSPE)

Current Committee Memberships

- NFPA 921, Guidelines for Fire and Explosion Investigations
- Mechanical Engineering Department Industry Advisory Council, Texas A&M University

Past Committee Memberships

- API Facility Siting Task Force
- CCPS Vapor Cloud Explosion Committee
- ACI Committee 370, Short Duration Dynamic and Vibratory Load Effects

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 BAKER RISK San Antonio		QUENTIN A. BAKER, P.E. Director – Investigation Services Senior Principal Engineer		<i>History of Expert Testimony</i>	
BakerRisk Project No.	Client	Case Name and Number	Court	Testimony Dates	
				Deposition	Court
9266-001 404 St. Charles St, Holden, MO	Armstrong Teasdale for Evergy	Gary & Debbie Bowers vs. Evergy Missouri West et. al.	Circuit Court of Johnson County, State of Missouri	2/18/2025	
8714-001 624 S. Walters St. San Antonio, TX	Naman Howell Smith & Lee for CPS Energy	Robert Rymers and Virginia Rymers vs. Right Choice Heating and Air Company, et. al.	District Court, 224 th Judicial District, Bexar County, TX	11/26/2024	2/5/25 – 2/6/25
9166-001 Mont Belvieu, TX	Baker Donelson for Targa	Marty Lira vs. Lone Star NGL Mont Belvieu LP, et. al.	11 th Judicial District Court, Harris County, TX	8/30/2024	
6120-003 DeRidder, LA	Fishman Haygood for Packaging Corporation of America, Inc.	Michael Johnson et. al. v. Packaging Corporation of America, Inc. et. al. Civil Action No. 3:18-CV-00613-SSD-EWD	United States District Court, Middle District of Louisiana		4/17/24
7359-001 Stateline Facility, Orla, TX	Zabel Freeman for Howard Energy	Elizabeth Chavez Rayos et. al., v. Catalyst Midstream Partners, LLC, et. al., Cause No. 2020CI18952	407 th Judicial District, Bexar County, TX	1/9/2024	
7202-001 Rembrandt Poultry, Rembrandt, IA	Nyemaster Goode for Tecno Poultry Equipment SPA	Rembrandt Enterprises, Inc. vs. Tecno Poultry Equipment S.P.A, et al., Civil Action 5:21-cv-04007	United States District Court for the Northern District of Iowa, Western Division	11/15/22	2/12/24
6735 2301 Bendridge Trail, Austin, TX	Armstrong Teasdale for OneGas	Toya Jones as Independent Administrator for the Estate of Nicole Burton and David Passman	Probate Court No. 1, Travis County	4/20/2021 5/18/2021	

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 BAKER RISK San Antonio		QUENTIN A. BAKER, P.E. Director – Investigation Services Senior Principal Engineer		<i>History of Expert Testimony</i>	
BakerRisk Project No.	Client	Case Name and Number	Court	Testimony Dates	
				Deposition	Court
6212-001 2481 Eldersville Rd, Follansbee, WV 26037	Babst Calland, Clements & Zommir for Mountaineer Gas Company	George K. Mozingo et al. vs. Mountaineer Gas Company, Civil Action No. 15-C-29	Circuit Court of Brooke County, West Virginia	8/5/2020	
5945-001, 002, 003 8701 Arliss Street, Silver Spring, MD	Schlee McCarthy; Covington & Burling for Washington Gas Light Company	Selvin Rosales, et al. vs. Washington Gas Light Company, et al., Consolidated Case No, 426972-V	Circuit Court for Montgomery County Maryland	11/1/19	
6393-001 6225 Rt. 162, Maryville, IL	Armstrong Teasdale for Ameren Illinois Company	Angela Behme vs. Ameren Illinois Company, et al., Cause No. 16-L-324	Twentieth Judicial Circuit Court, St. Clair County, IL	6/21/18	
6092-001 Southcross, Woodsboro, TX	Brock, Person, Guerra, Reyna for Southcross Energy	Victor A. Henneke, Jr., et al. vs. Furmanite Corporation, et al., Cause No. DC-16-139	229 th Judicial Court, Duval County, TX	7/21/17	9/21/17
3540-001 Frac Site near Jourdanton, TX	Brock, Person, Guerra, Reyna for Stewart & Stevenson	Hanover Insurance Group, et al. vs. Stewart & Stevenson, et al. Cause No. 13-08-07222-CVA	218 th Judicial Court, Atascosa County, TX	8/24/16	
4954-001 West Palm Beach, FL	Florida Power and Light Company	Barry Harris and Andrea Harris vs. Florida Public Utilities Company and Florida Power & Light Co., Case No. 2013 CA 11687 AB	Fifteenth Judicial Circuit, West Palm Beach, FL	3/1/16	
3275-001	Schlee, Huber, McMullen & Krause for Suburban Energy Services	Estate of Orval Jensen and Karen Jensen vs. Suburban Energy Services, LLC et al., Civil No. 090400377	Fourth Judicial District Court of Utah County, State of Utah, Provo Department	1/29/14	

APPENDIX B. TEST DATA

Tests utilizing the SPEC 0 to 20 ppm sensors (tests 1 through 6), the converted ozone concentration is plotted along with the phase of the SoClean cycle.

Tests utilizing the MQ1310 1000 ppm sensors (tests 7 through 32), the raw voltage is plotted along with the phase of the SoClean cycle.

Tests utilizing the handheld GD200-03 sensor (tests 13 through 32), have the concentration data shown in a separate plot.

For all plots with the phase plotted:

- Phase 0: sensor warmup
- Phase 1: sensor baseline (5 minutes)
- Phase 2: disinfecting cycle (7 minutes)
- Phase 3: dwell time (2 hours)
- Phase 4: purge (2 minutes)

Baker Botts, Sullivan and Cromwell
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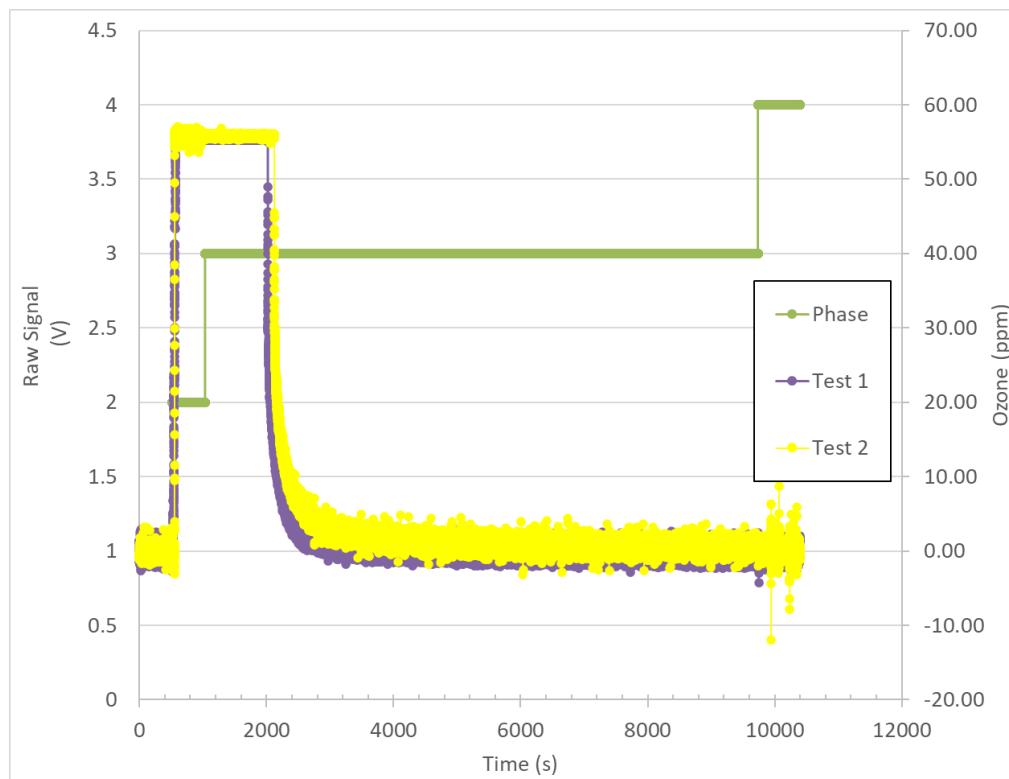


Figure B-1. Test 1 and Test 2

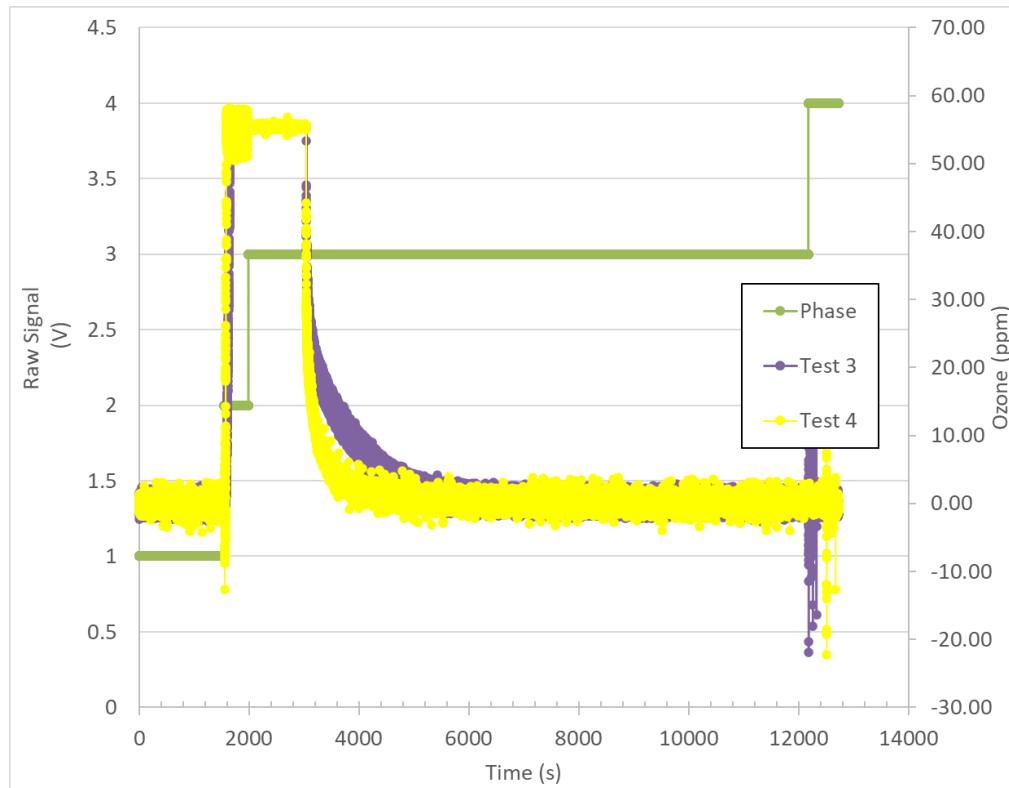


Figure B-2. Test 3 and Test 4

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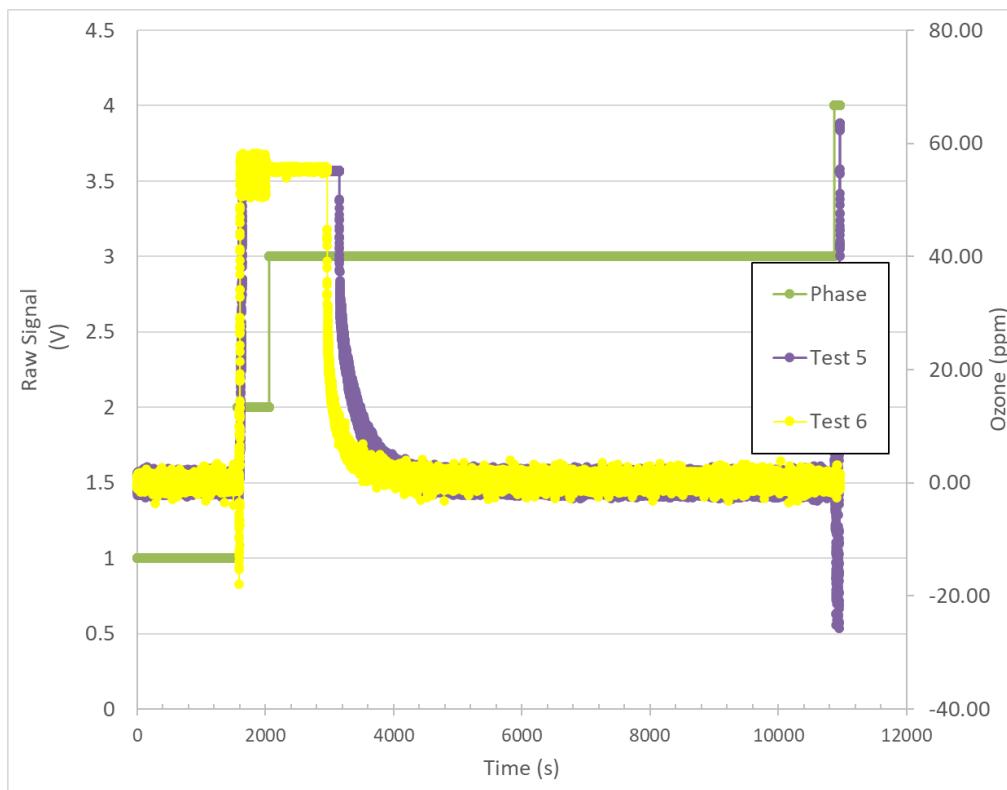


Figure B-3. Test 5 and Test 6

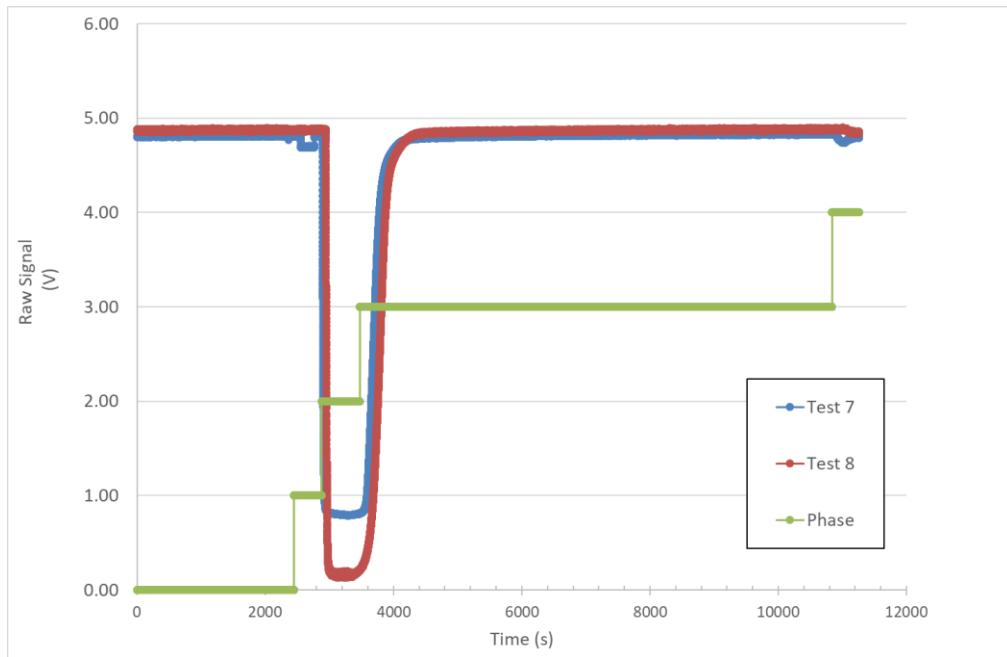


Figure B-4. Test 7 and Test 8

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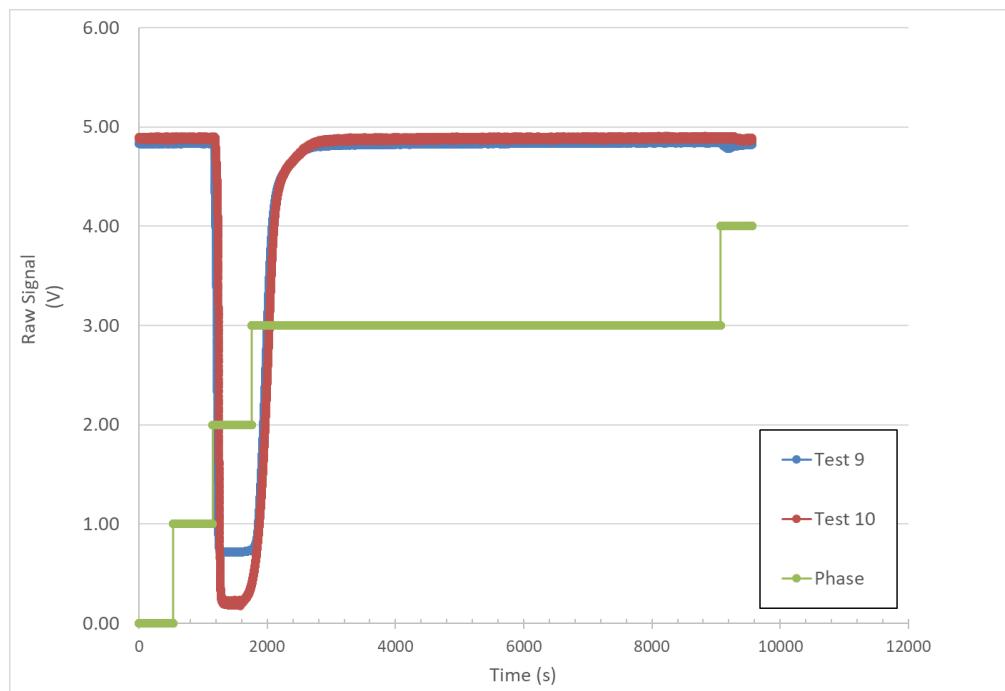


Figure B-5. Test 9 and Test 10

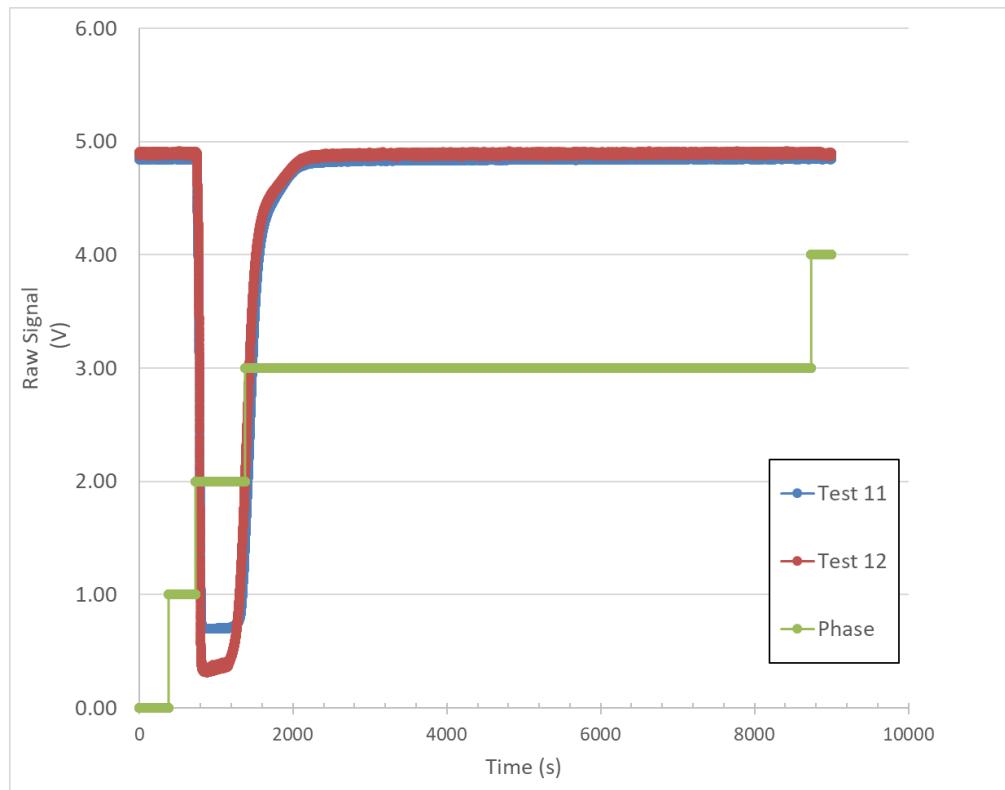


Figure B-6. Test 11 and Test 12

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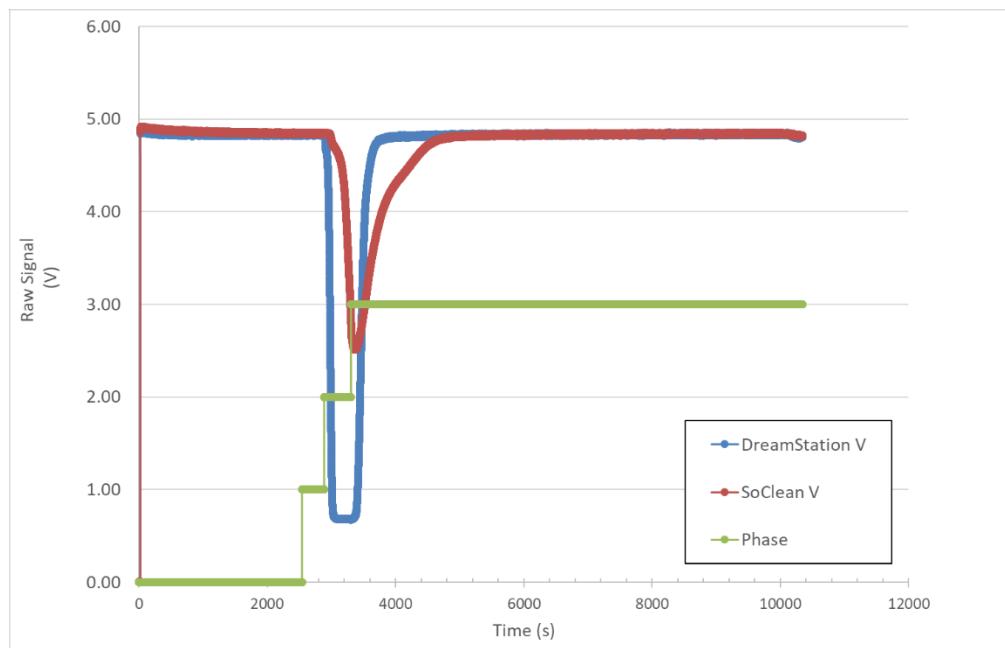


Figure B-7. Test 13

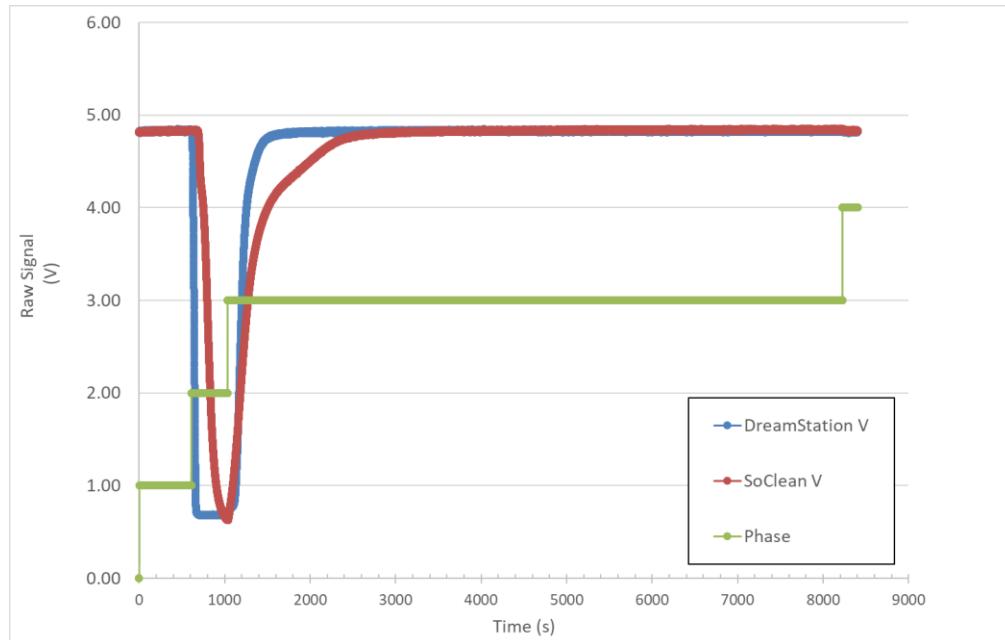


Figure B-8. Test 14

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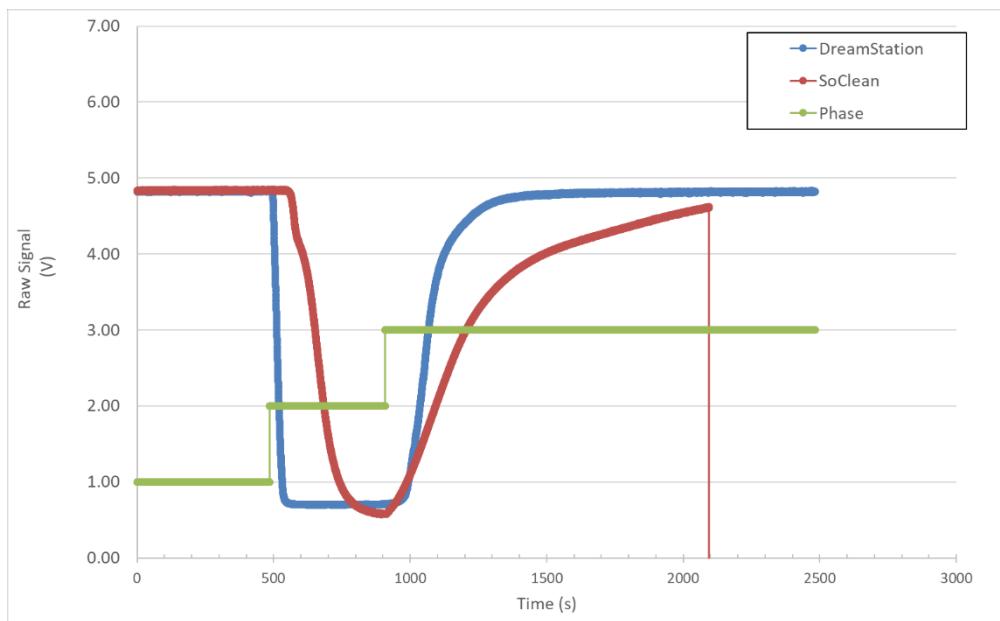


Figure B-9. Test 15

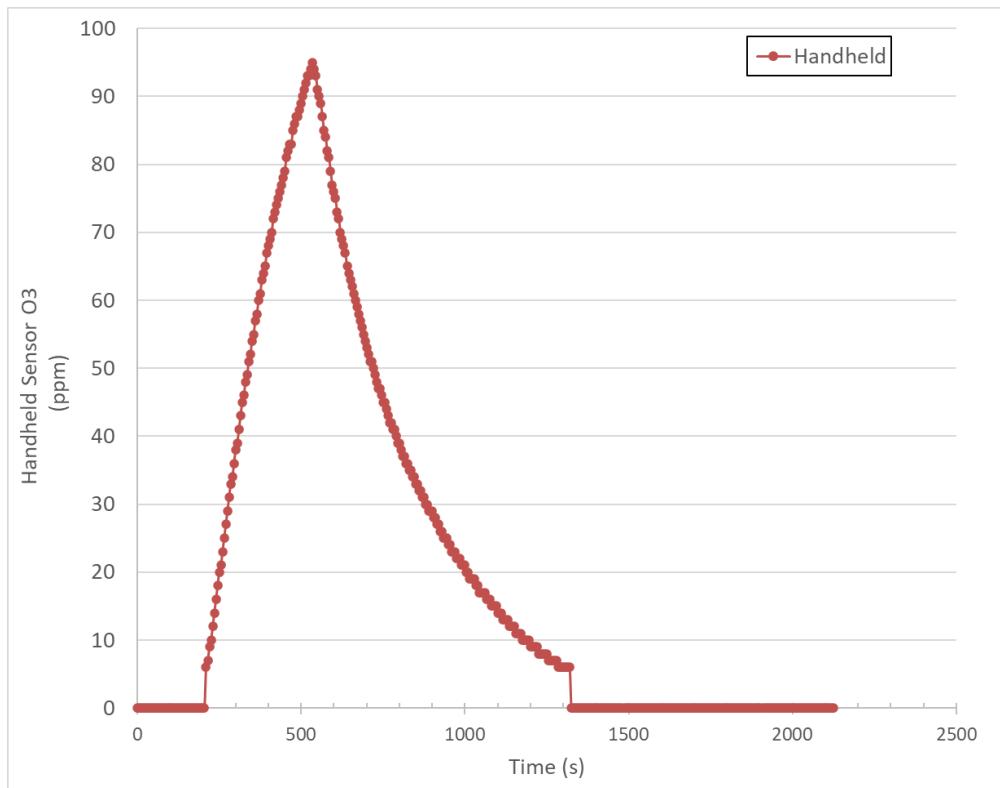
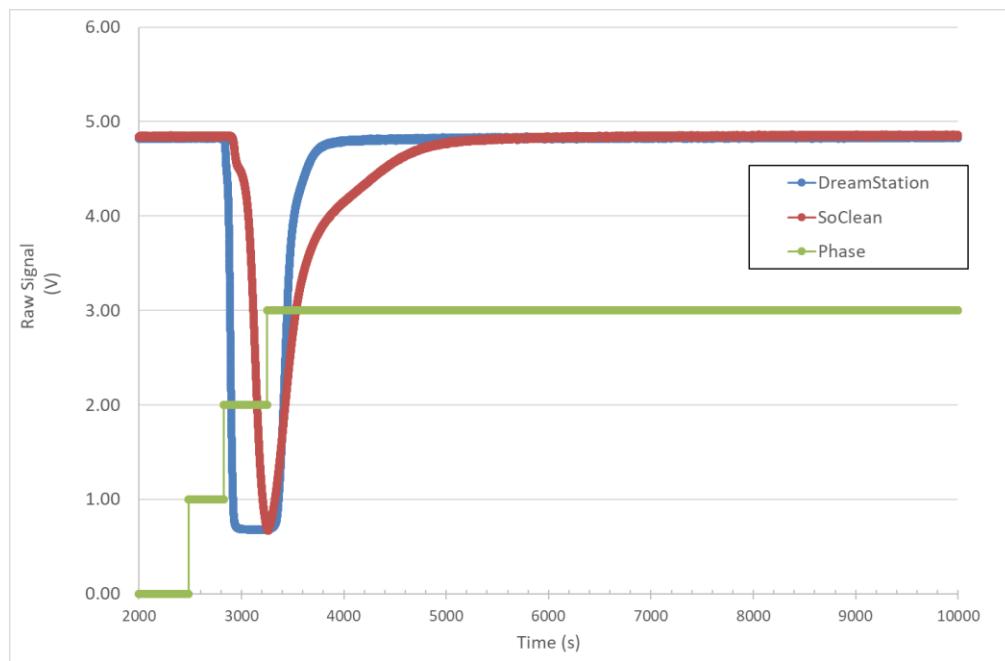
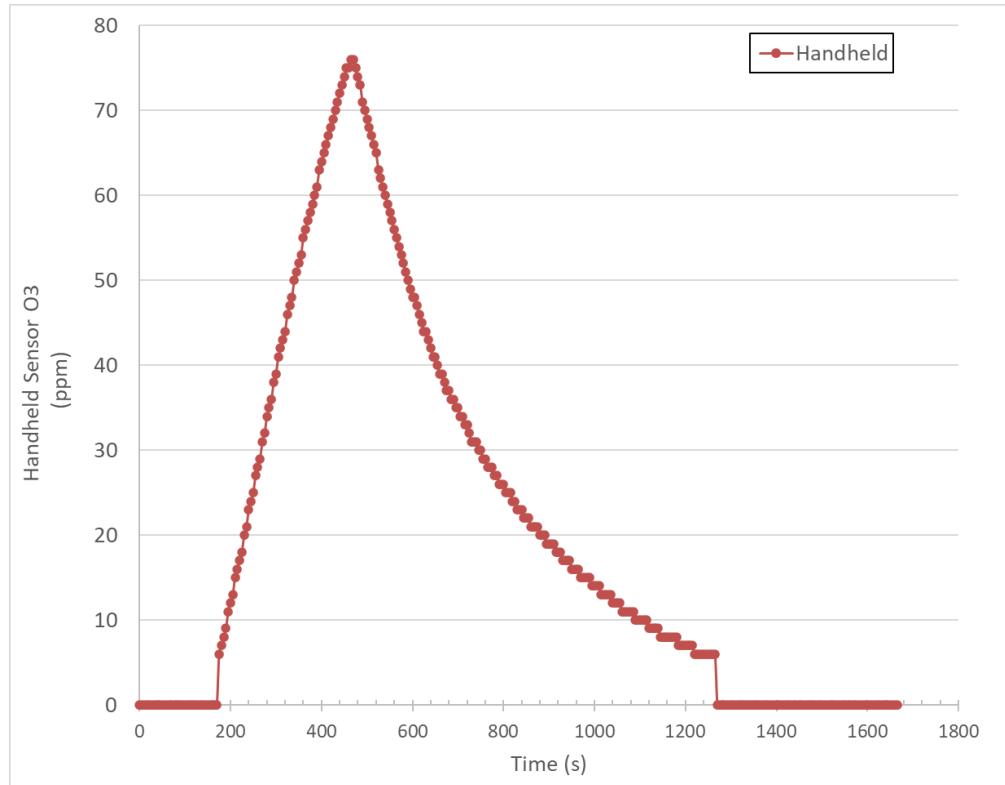
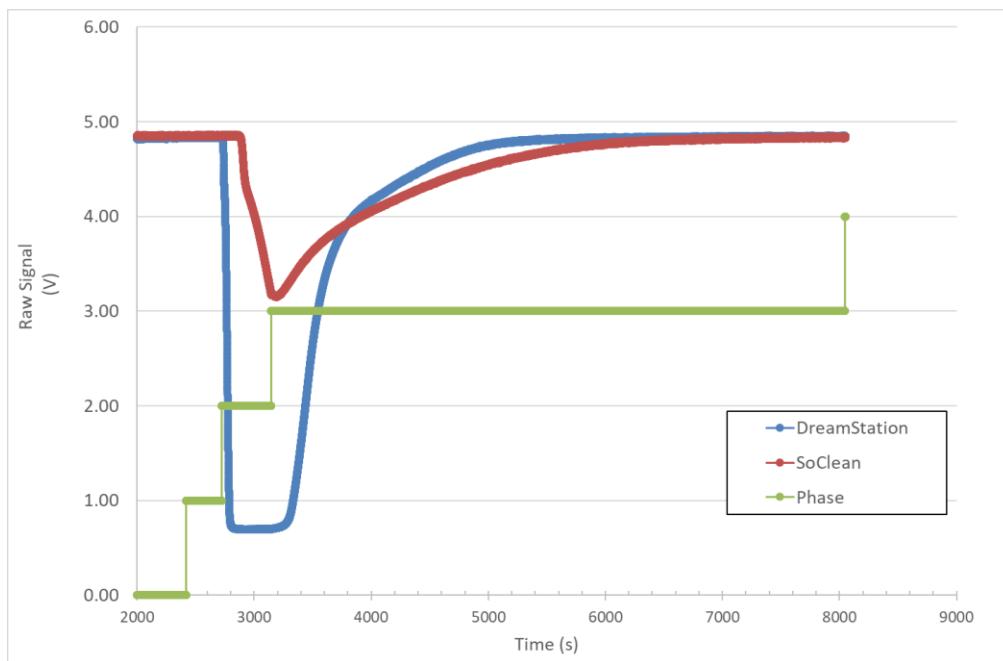
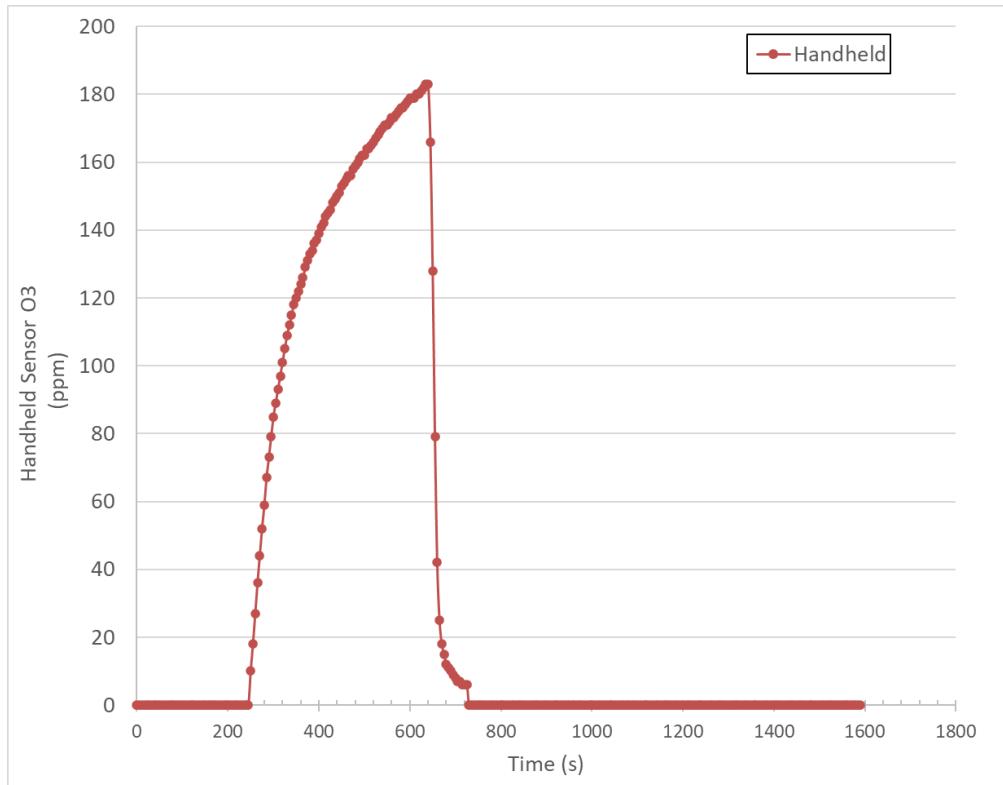


Figure B-10. Test 15 Handheld

**Figure B-11. Test 16****Figure B-12. Test 16 Handheld**

**Figure B-13. Test 17****Figure B-14. Test 17 Handheld**

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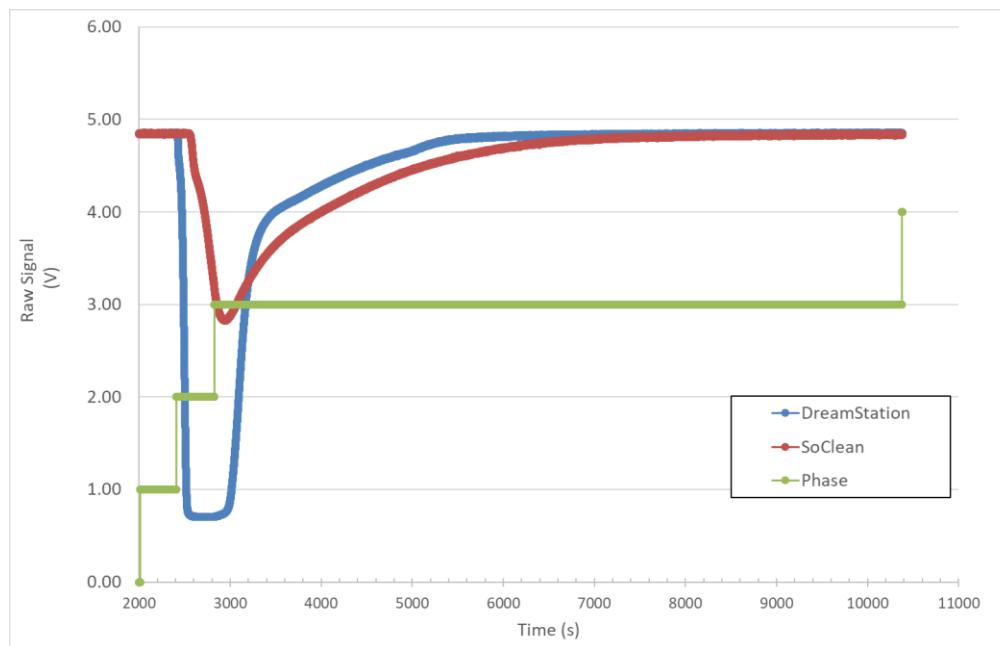


Figure B-15. Test 18

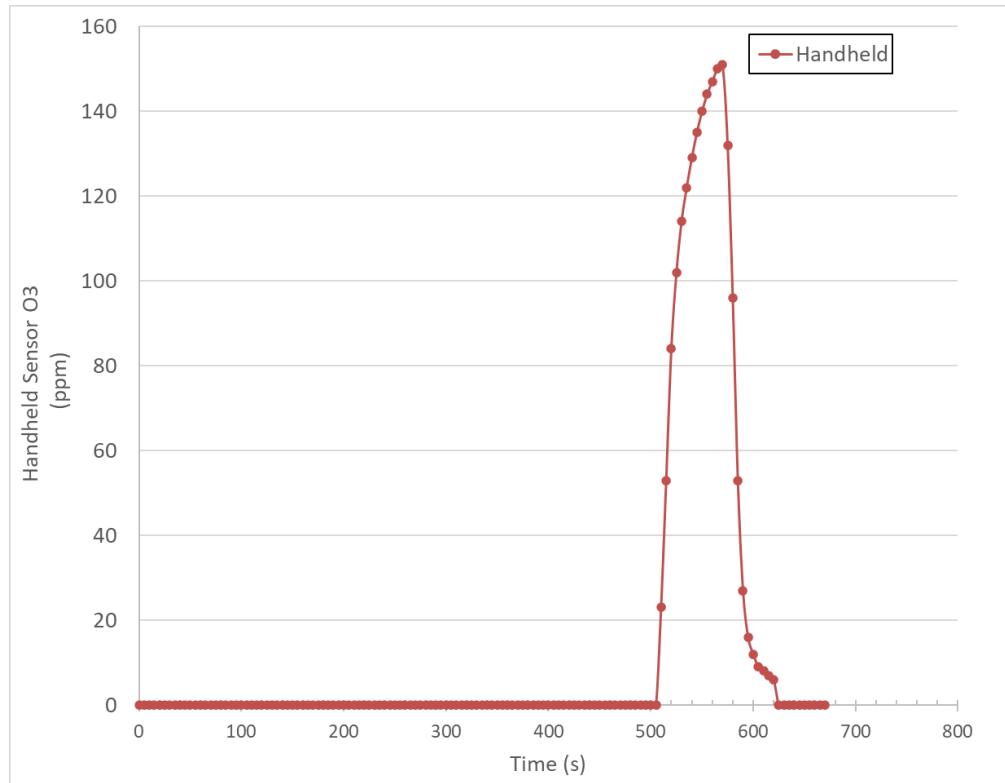


Figure B-16. Test 18 Handheld

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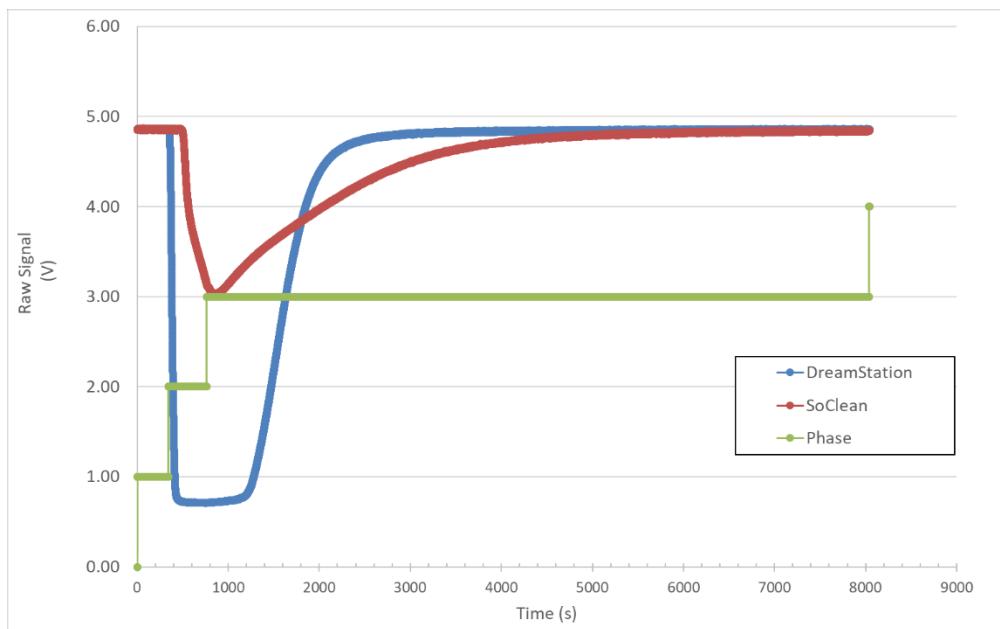


Figure B-17. Test 19

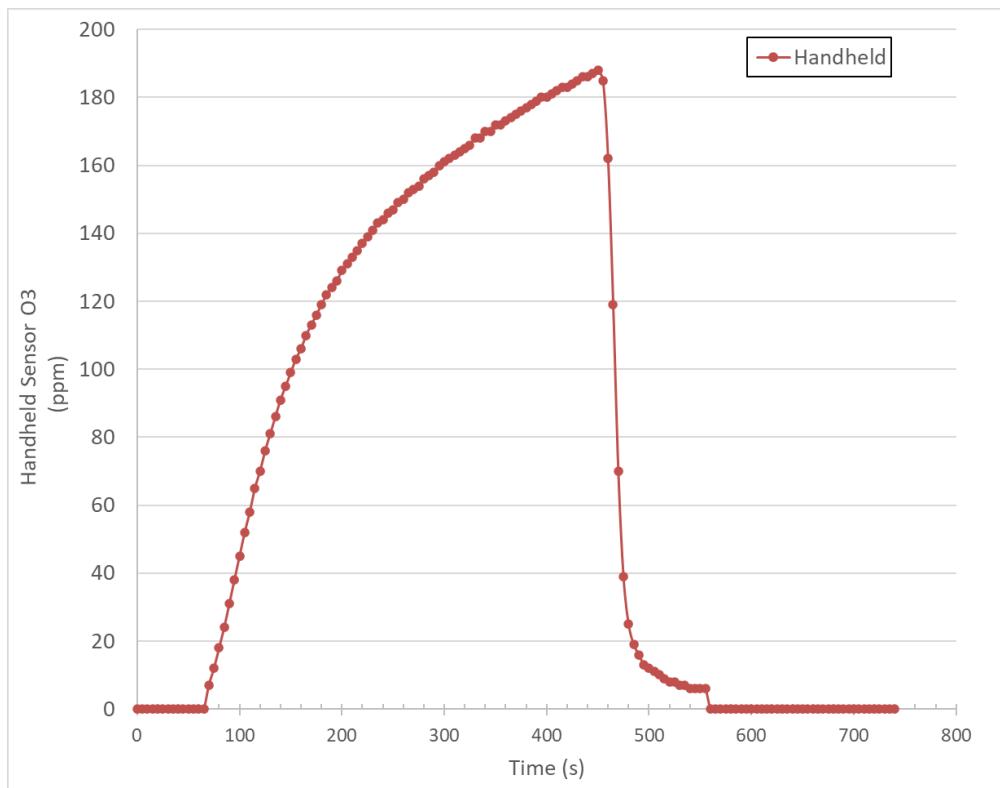
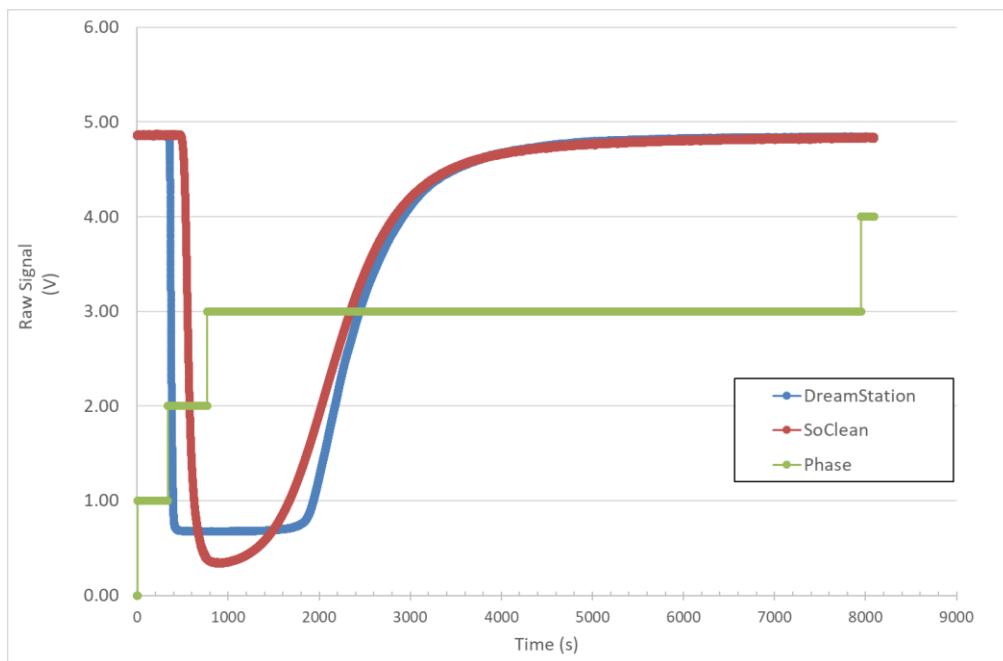
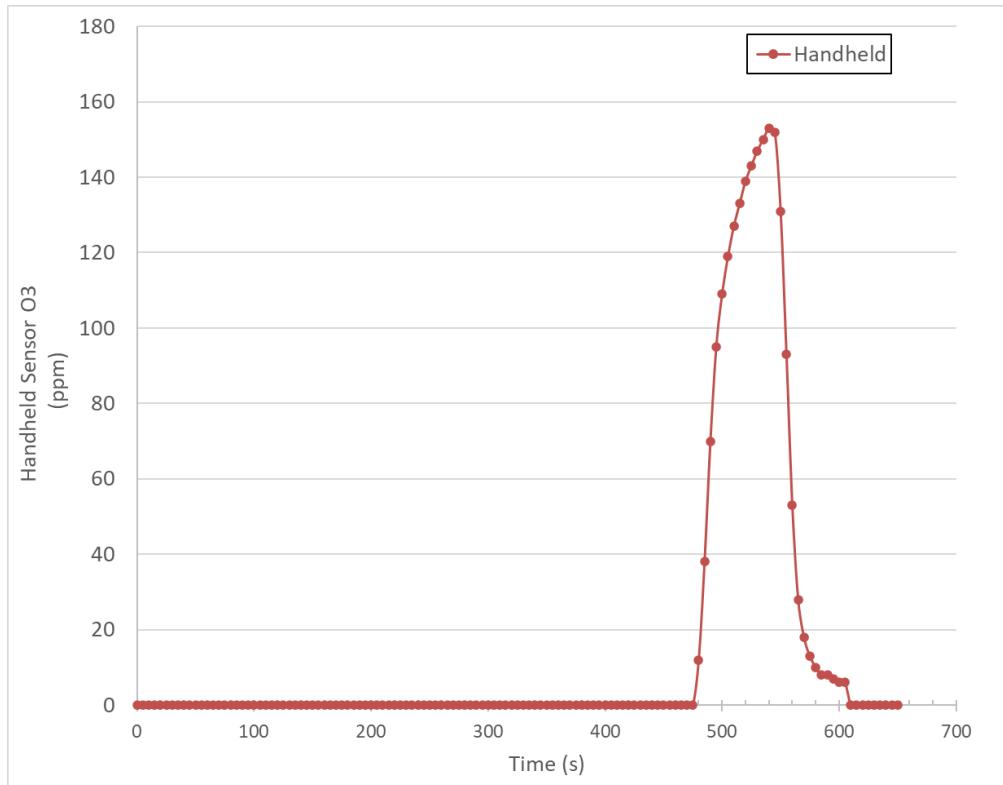


Figure B-18. Test 19 Handheld

**Figure B-19. Test 20****Figure B-20. Test 20 Handheld**

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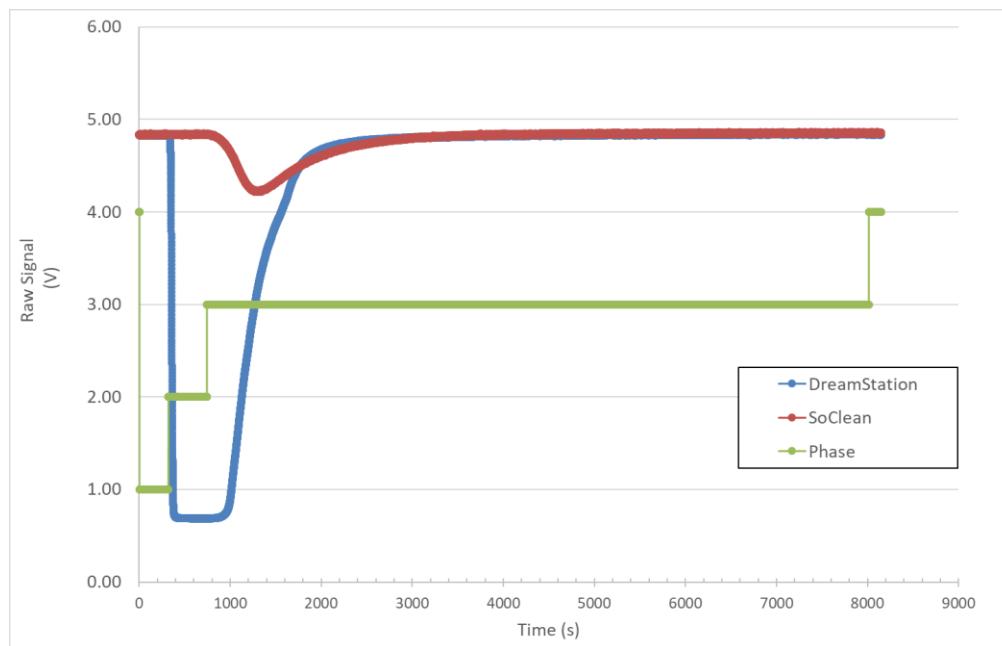


Figure B-21. Test 21

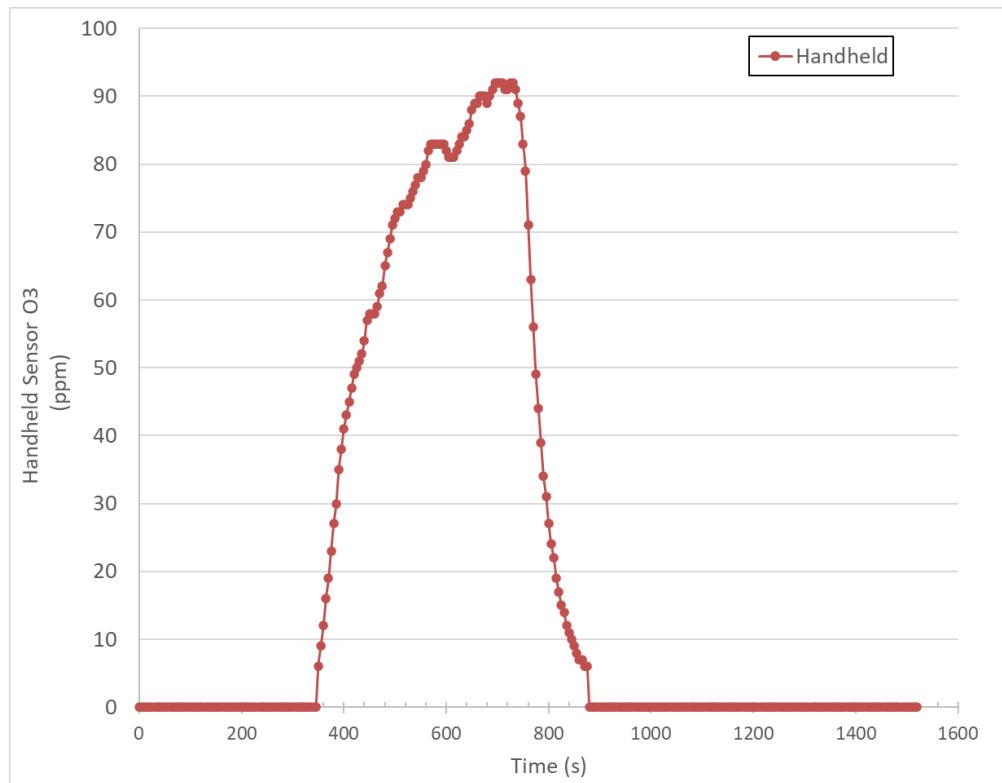


Figure B-22. Test 21 Handheld

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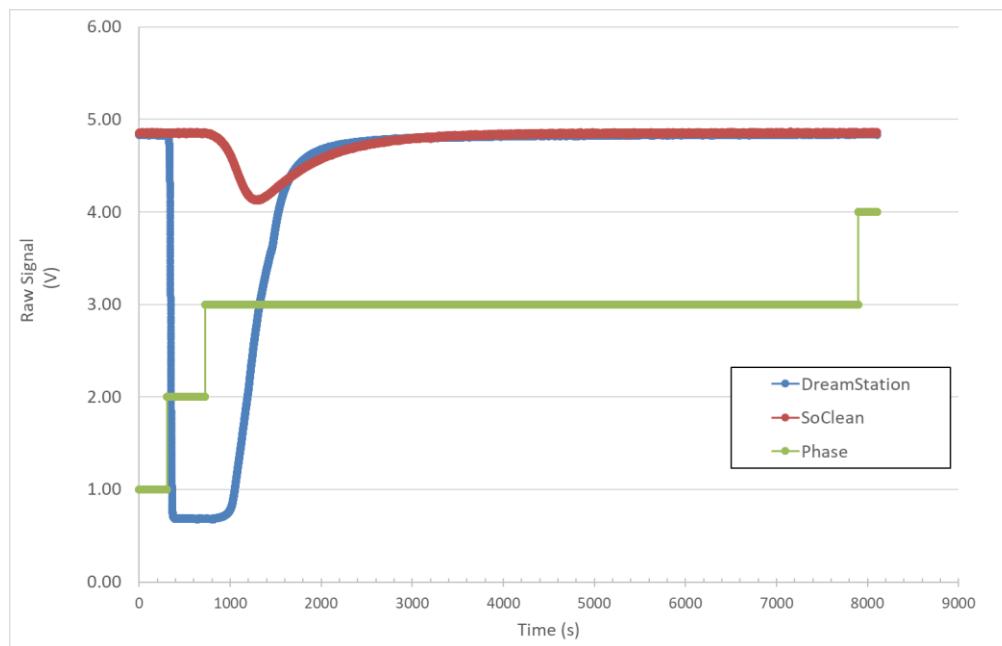


Figure B-23. Test 22

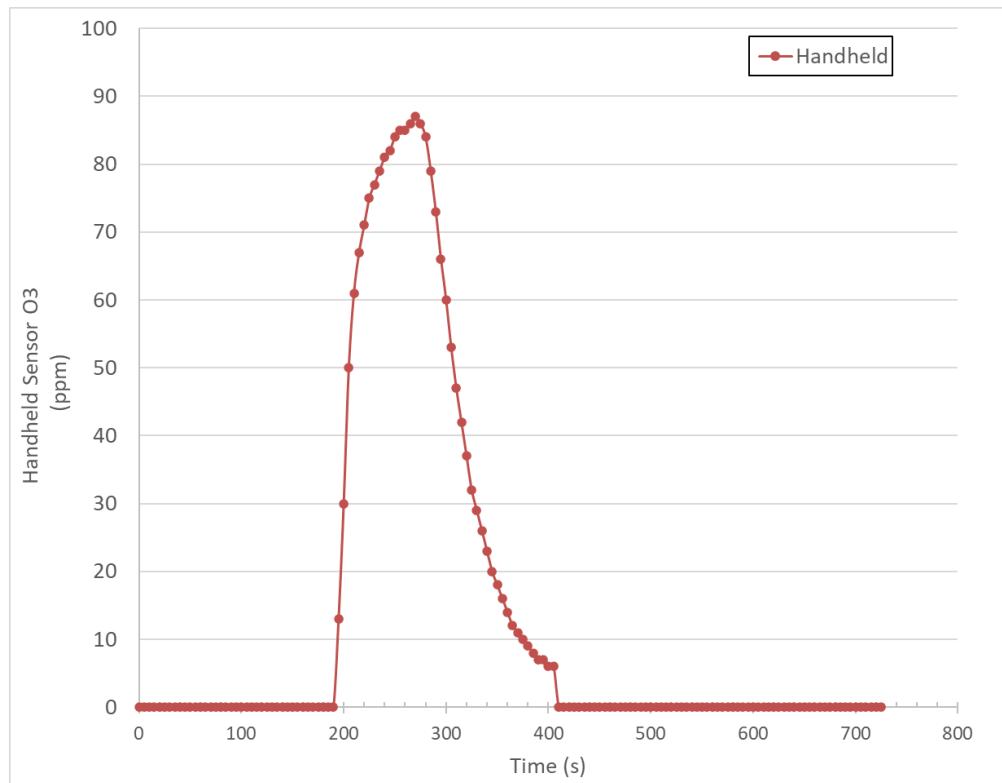


Figure B-24. Test 22 Handheld

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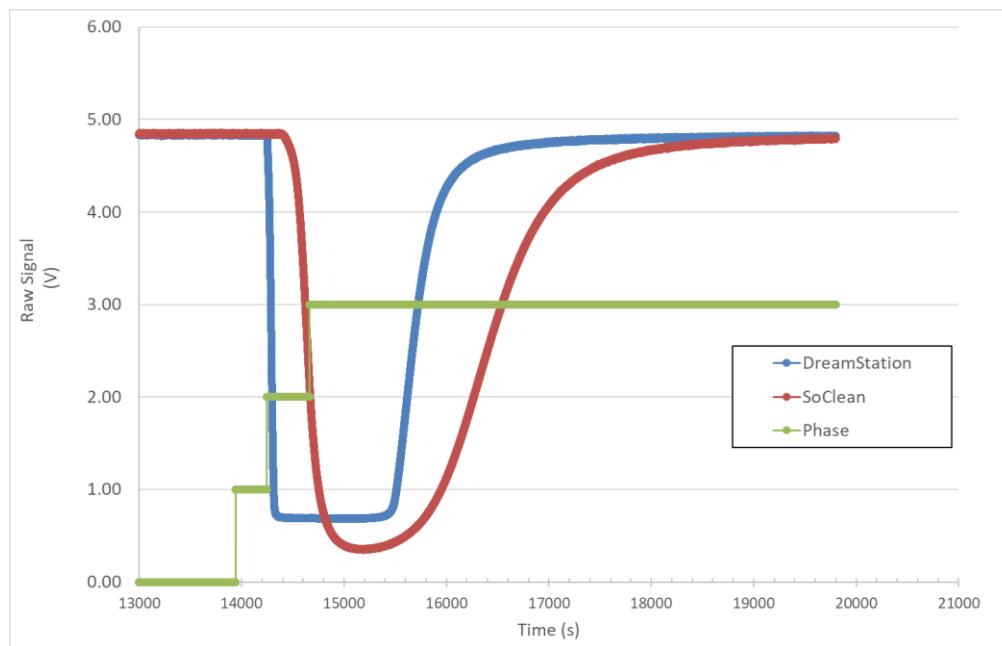


Figure B-25. Test 23

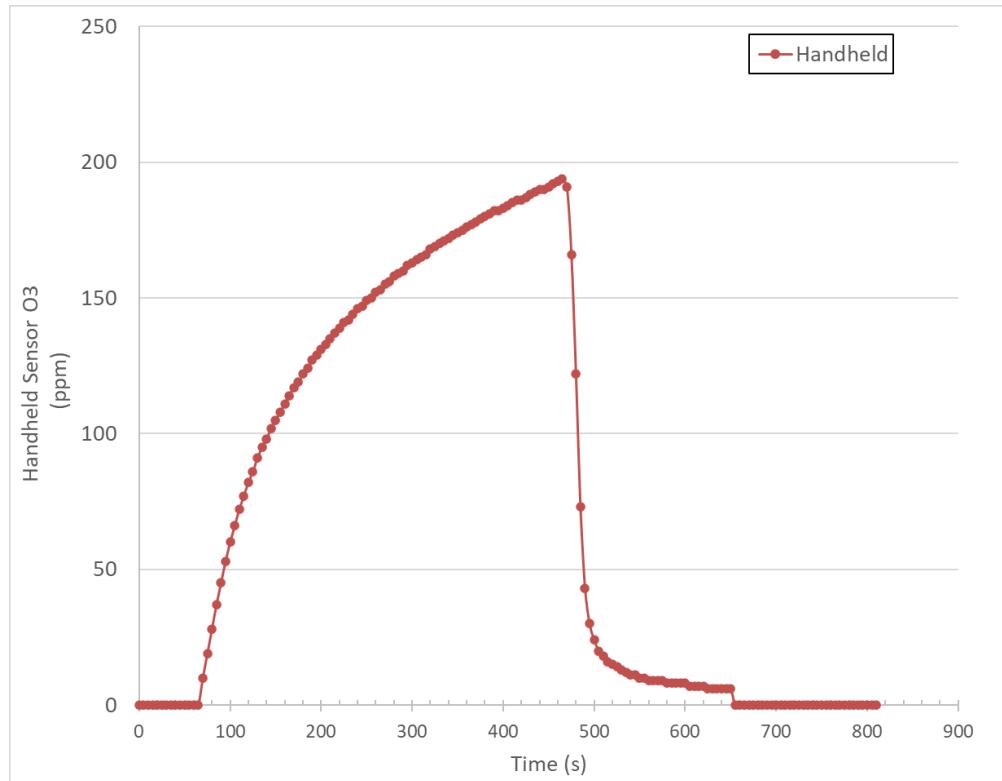
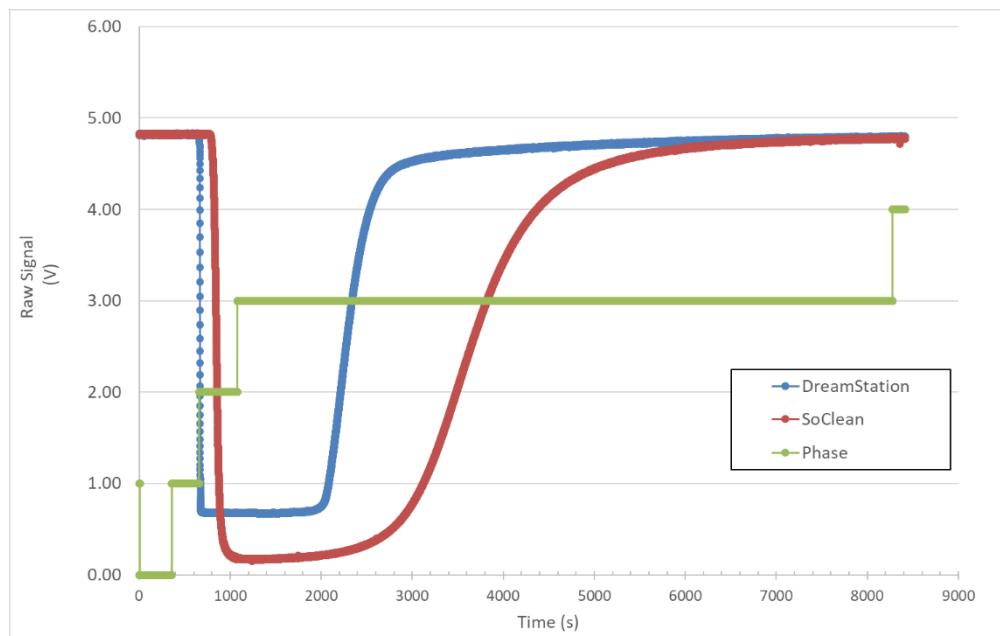
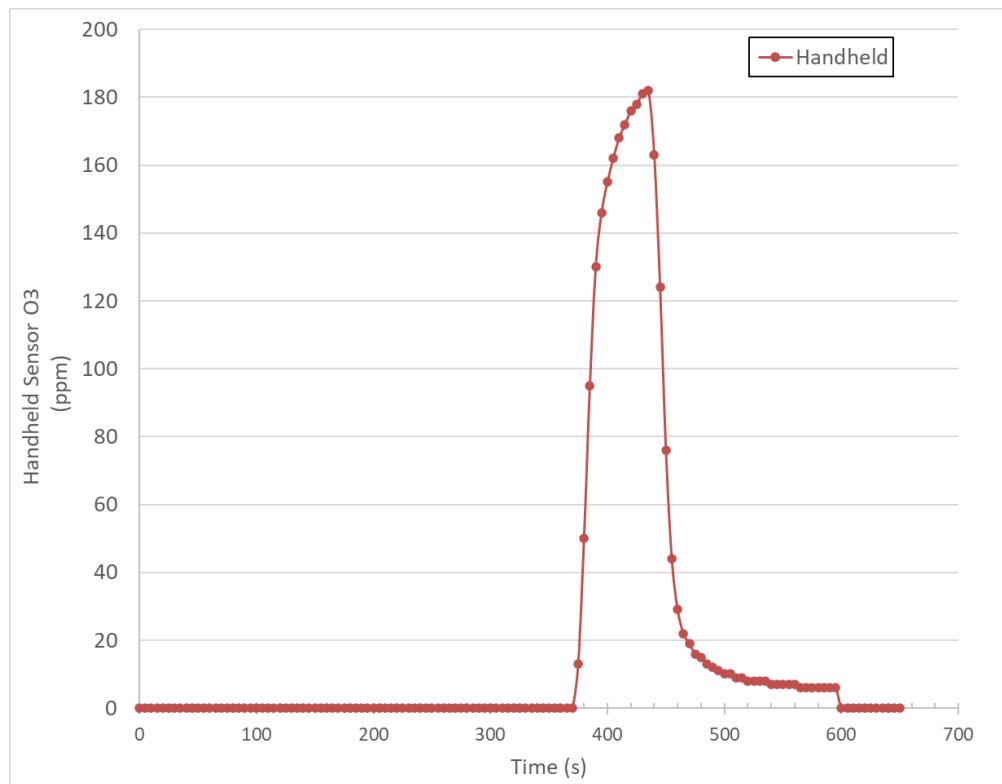


Figure B-26. Test 23 Handheld

**Figure B-27. Test 24****Figure B-28. Test 24 Handheld**

Baker Botts, Sullivan and Cromwell
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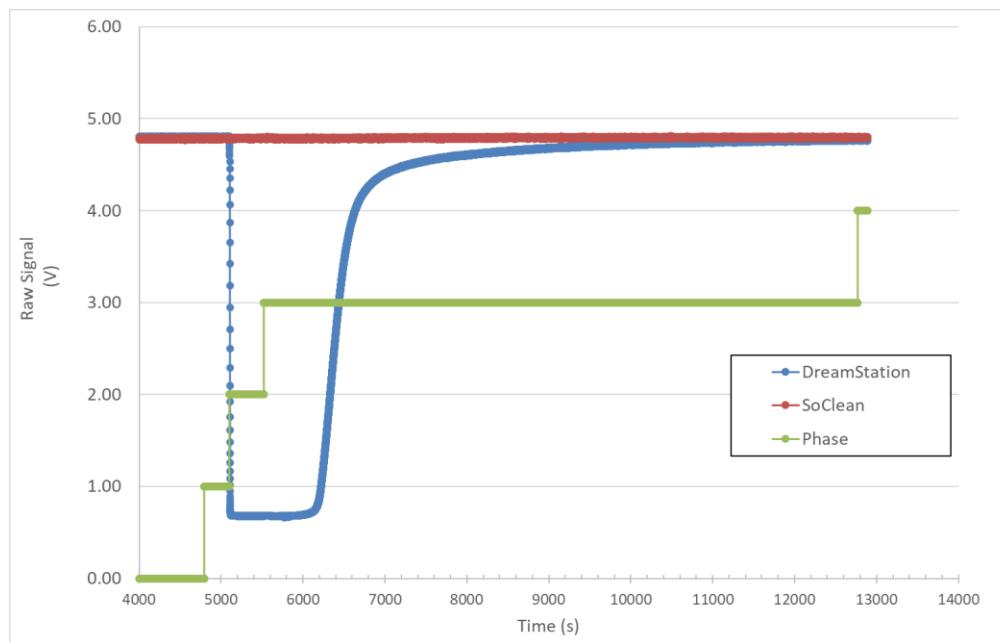


Figure B-29. Test 25

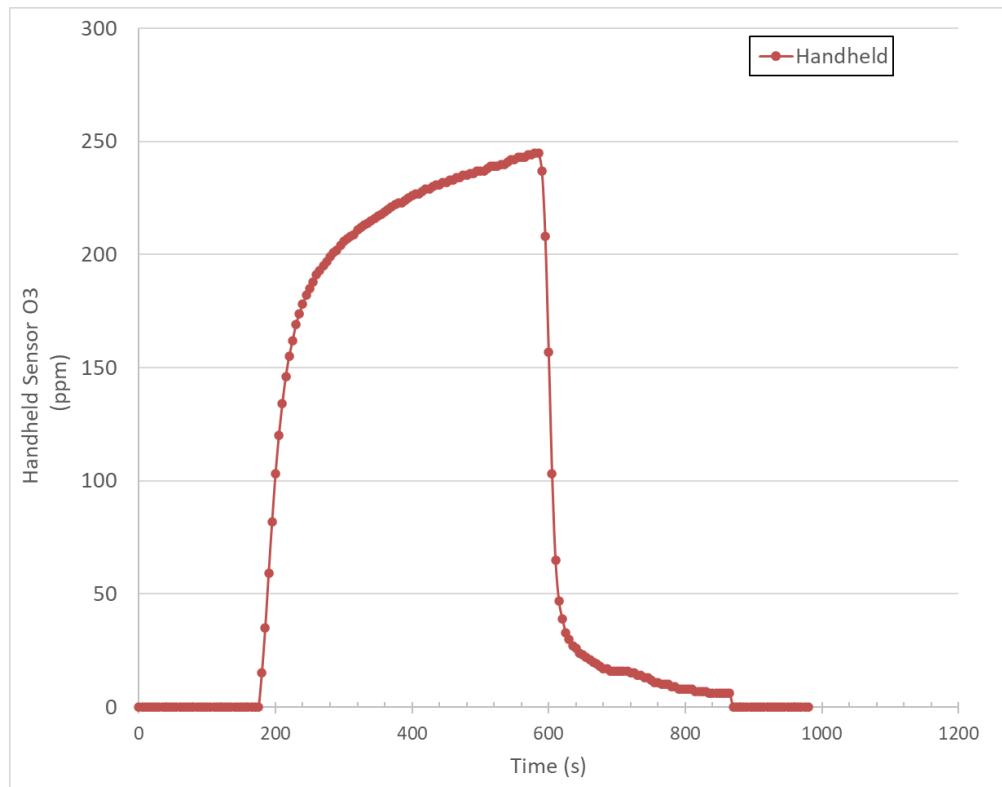
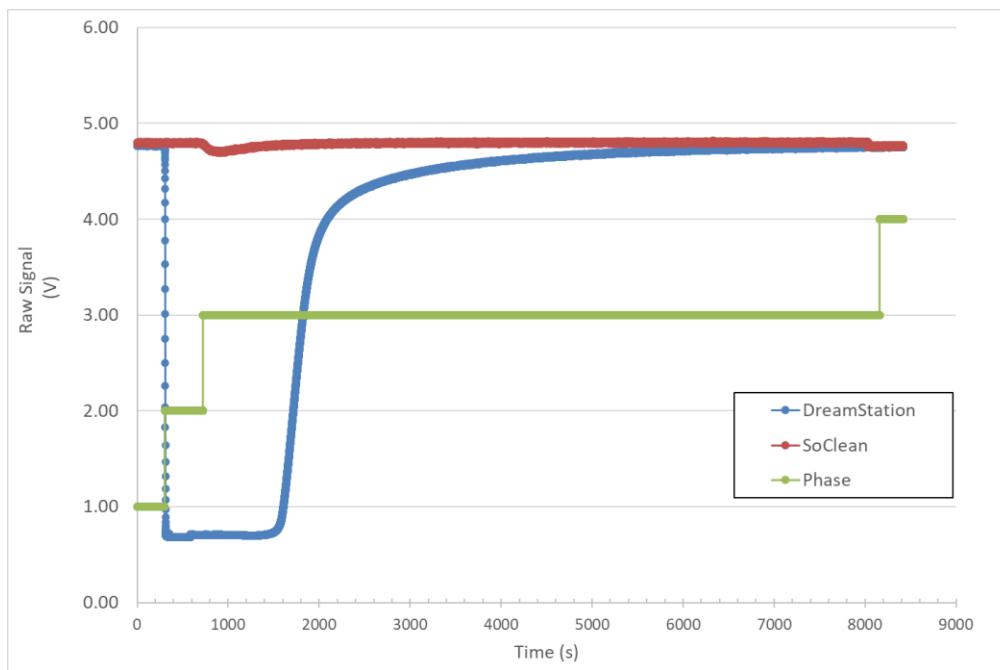
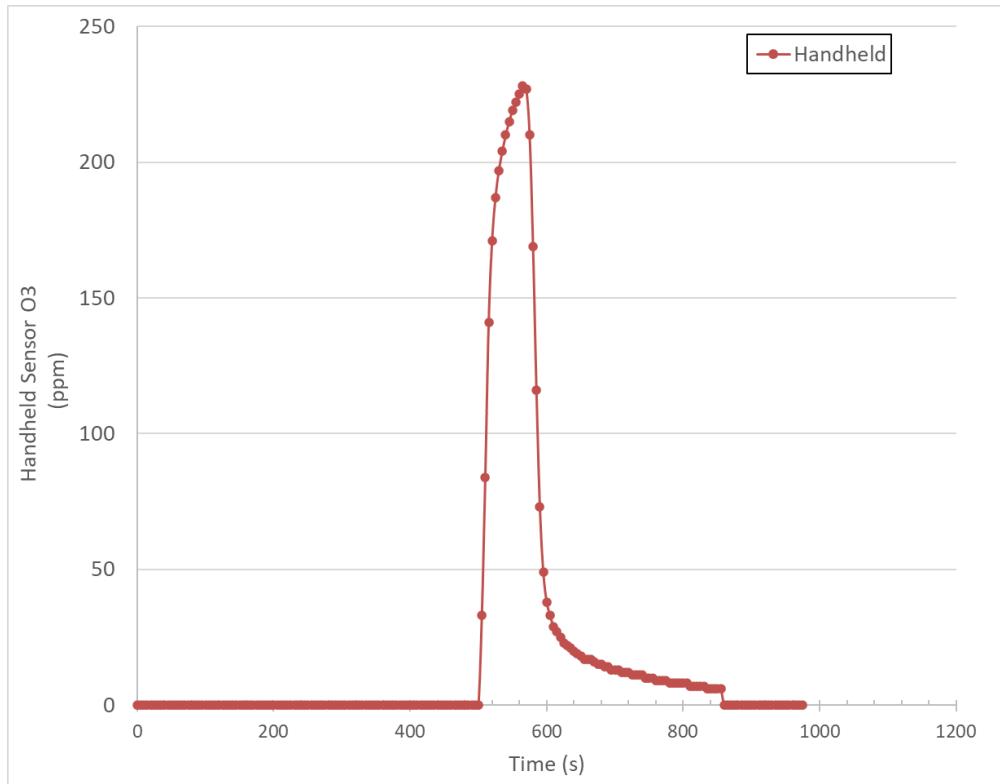
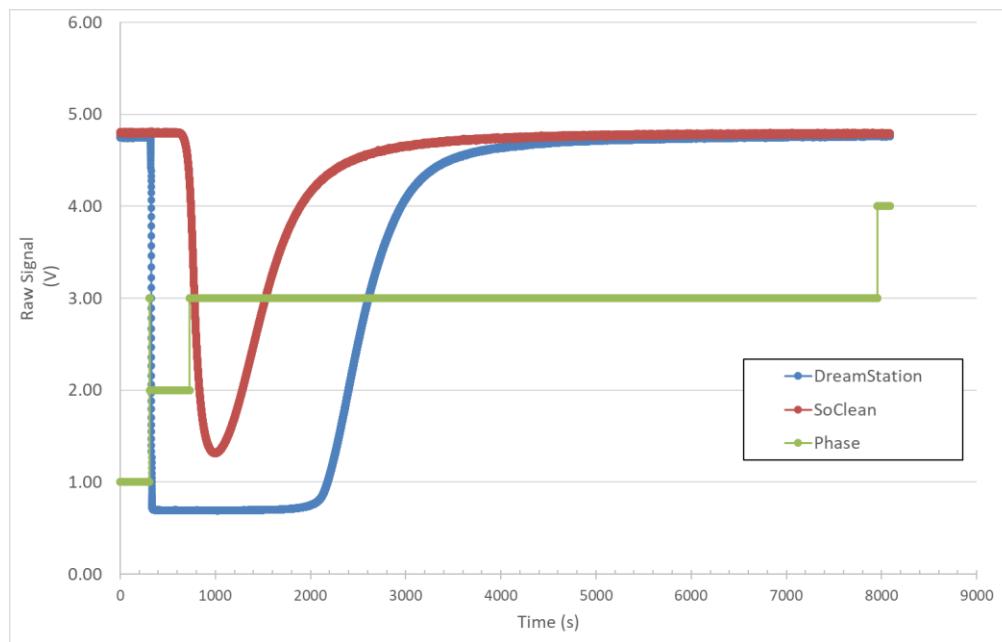
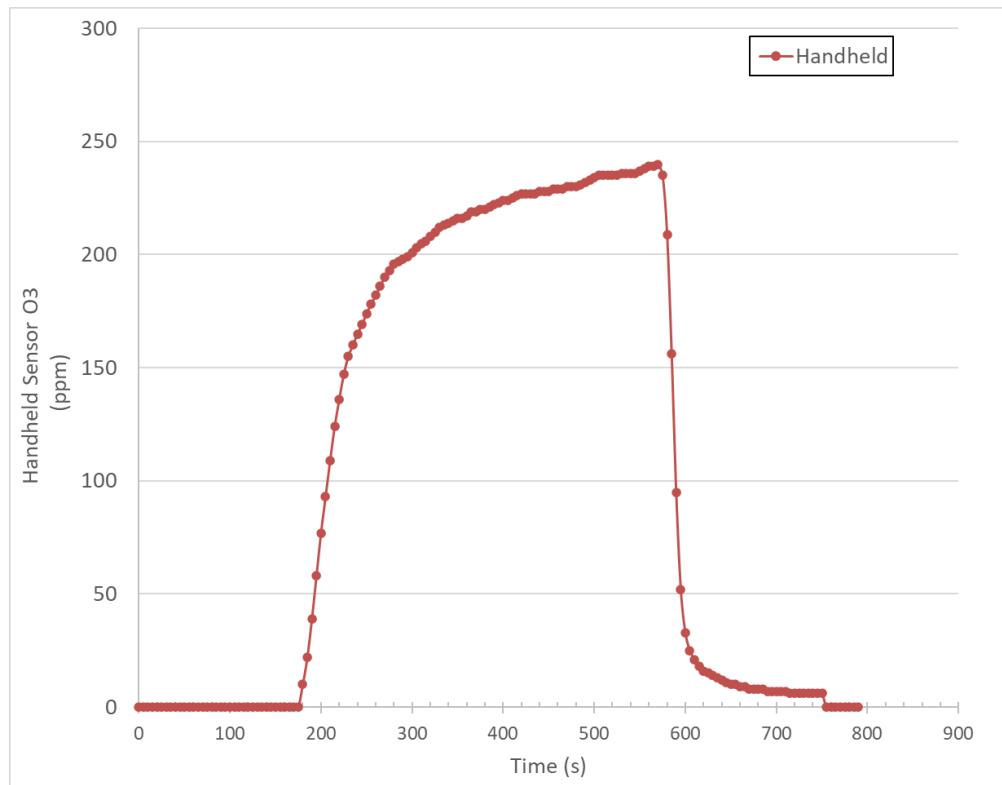
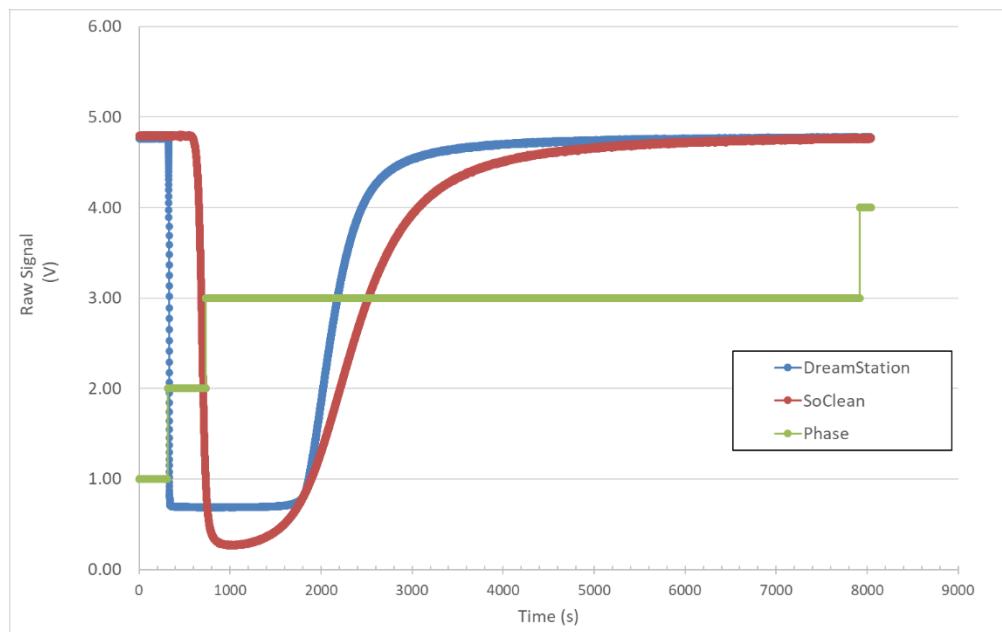
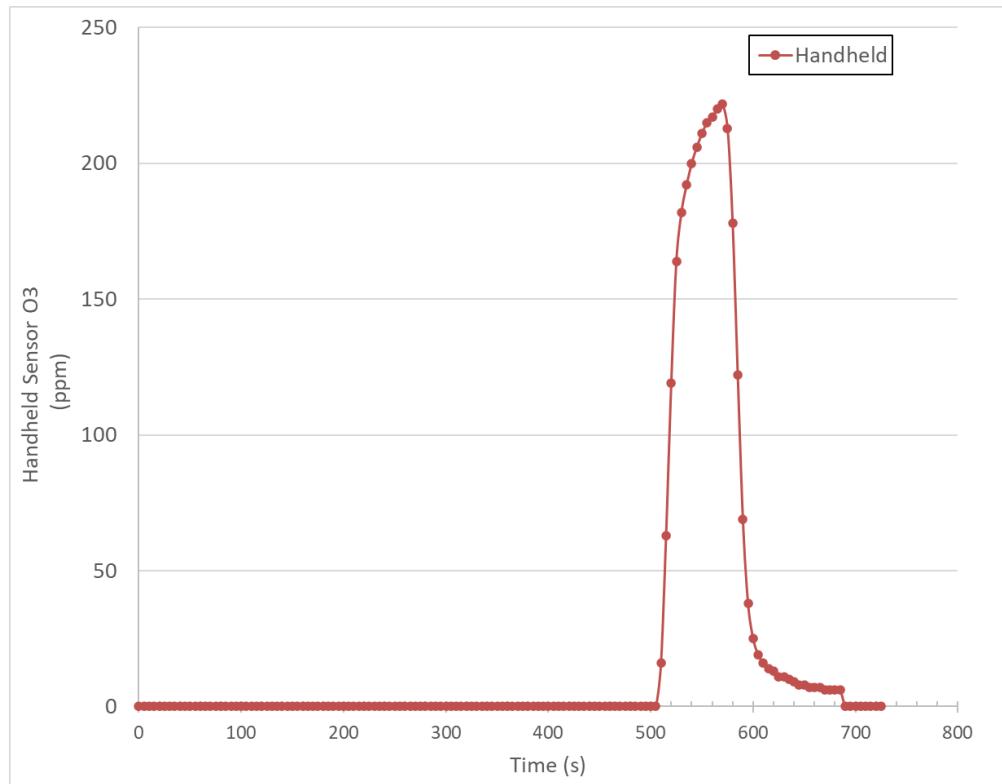


Figure B-30. Test 25 Handheld

**Figure B-31. Test 26****Figure B-32. Test 26 Handheld**

**Figure B-33. Test 27****Figure B-34. Test 27 Handheld**

**Figure B-35. Test 28****Figure B-36. Test 28 Handheld**

Baker Botts, Sullivan and Cromwell
Ozone Level Testing Involving SoClean 2 and DreamStation 1

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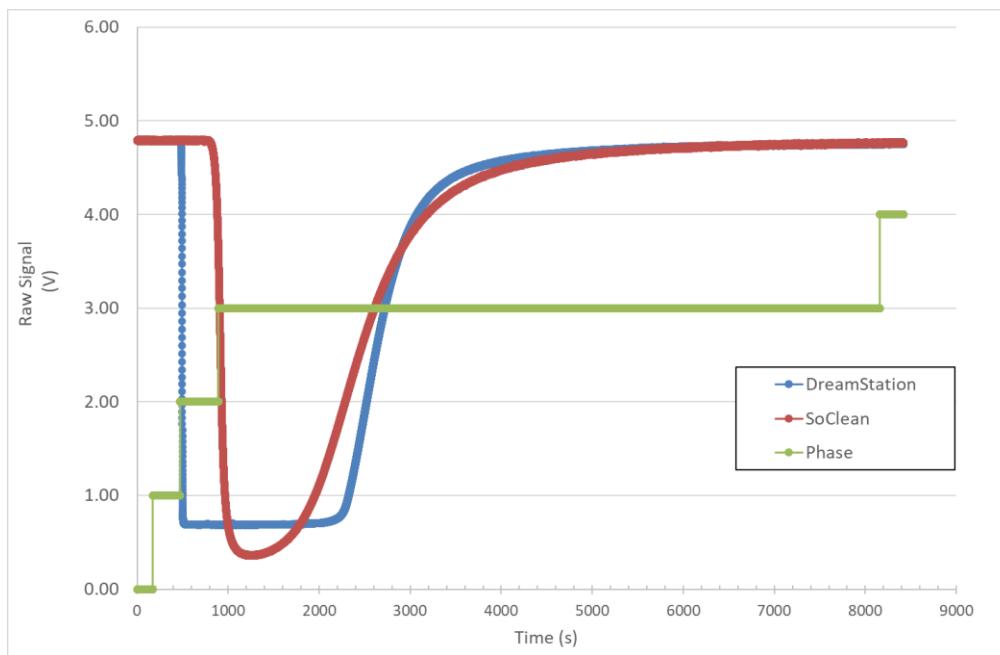


Figure B-37. Test 29

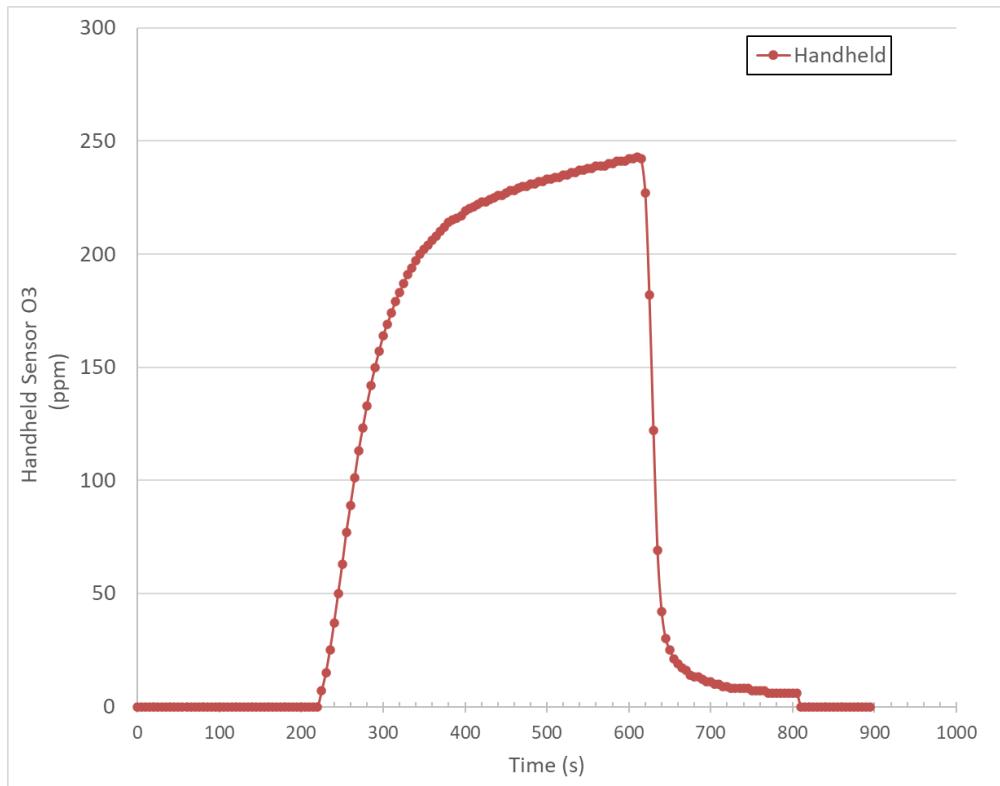
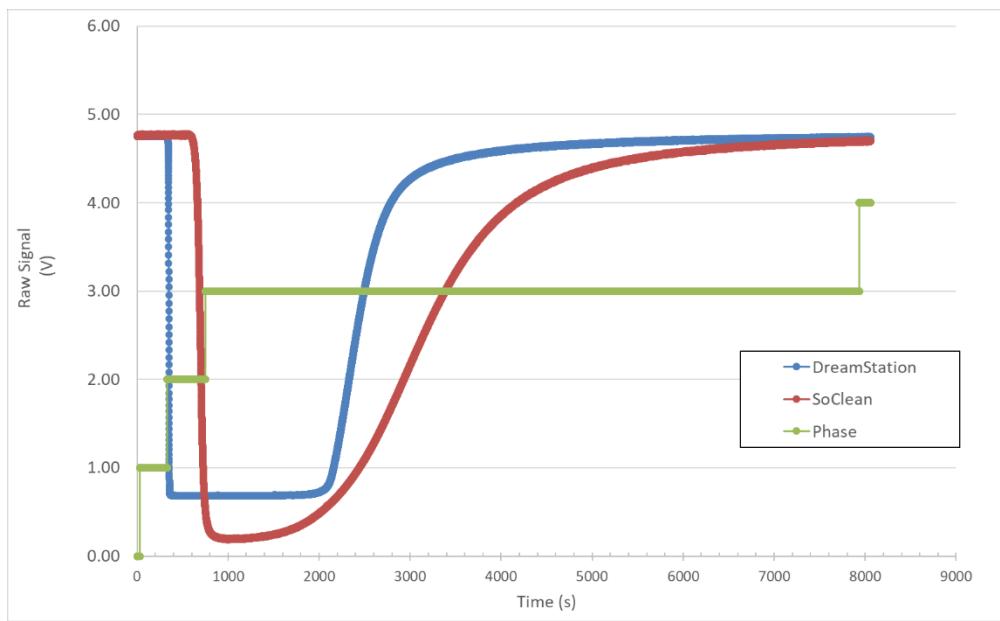
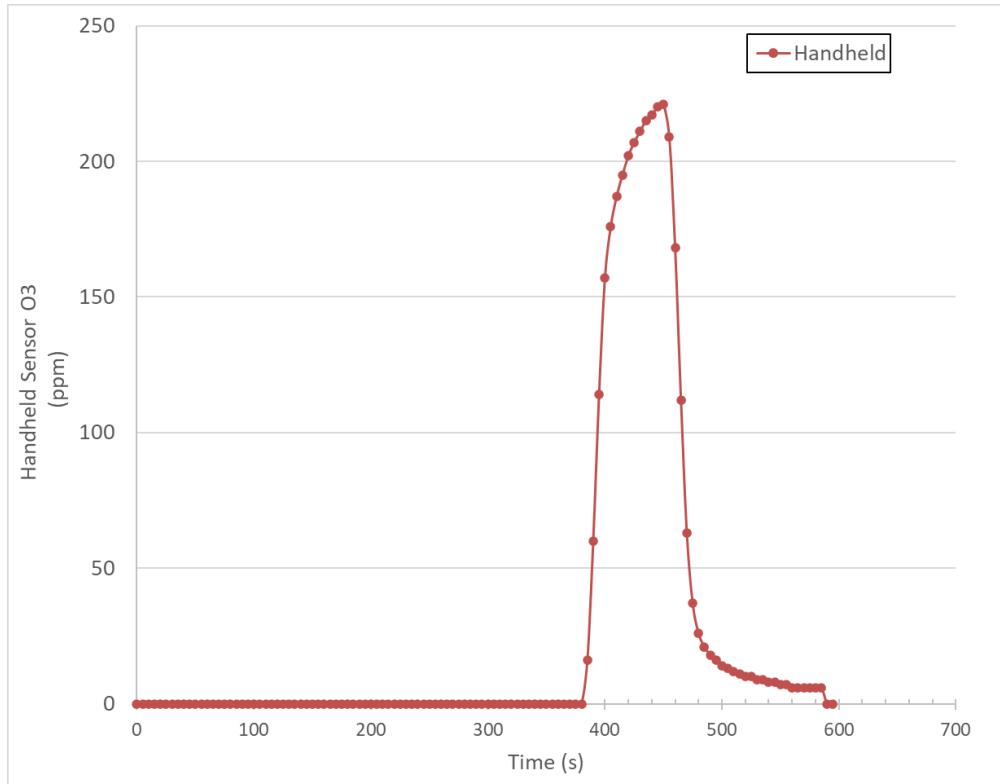


Figure B-38. Test 29 Handheld

**Figure B-39. Test 30****Figure B-40. Test 30 Handheld**

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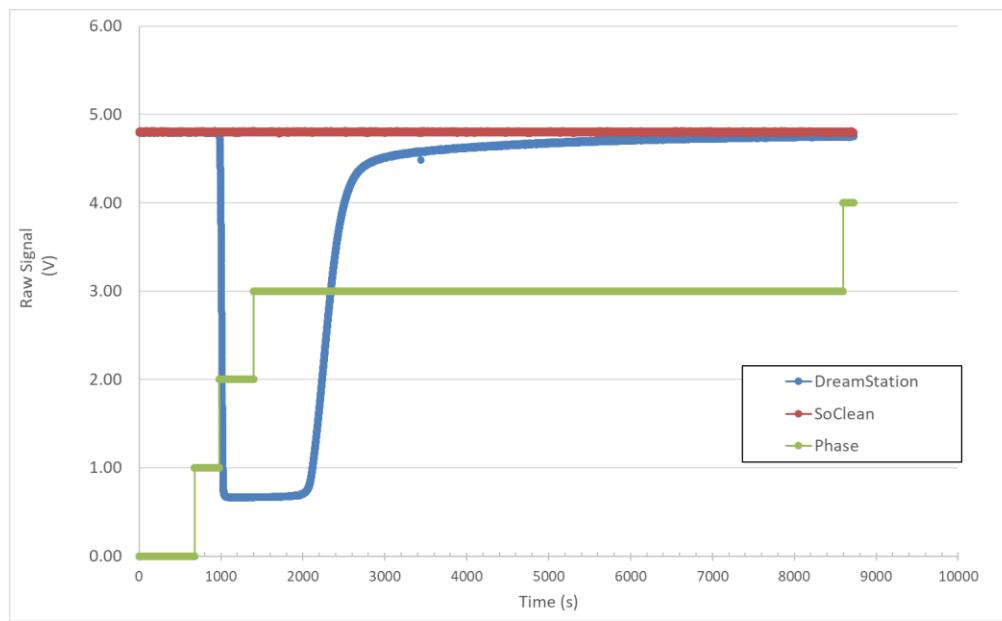


Figure B-41. Test 31

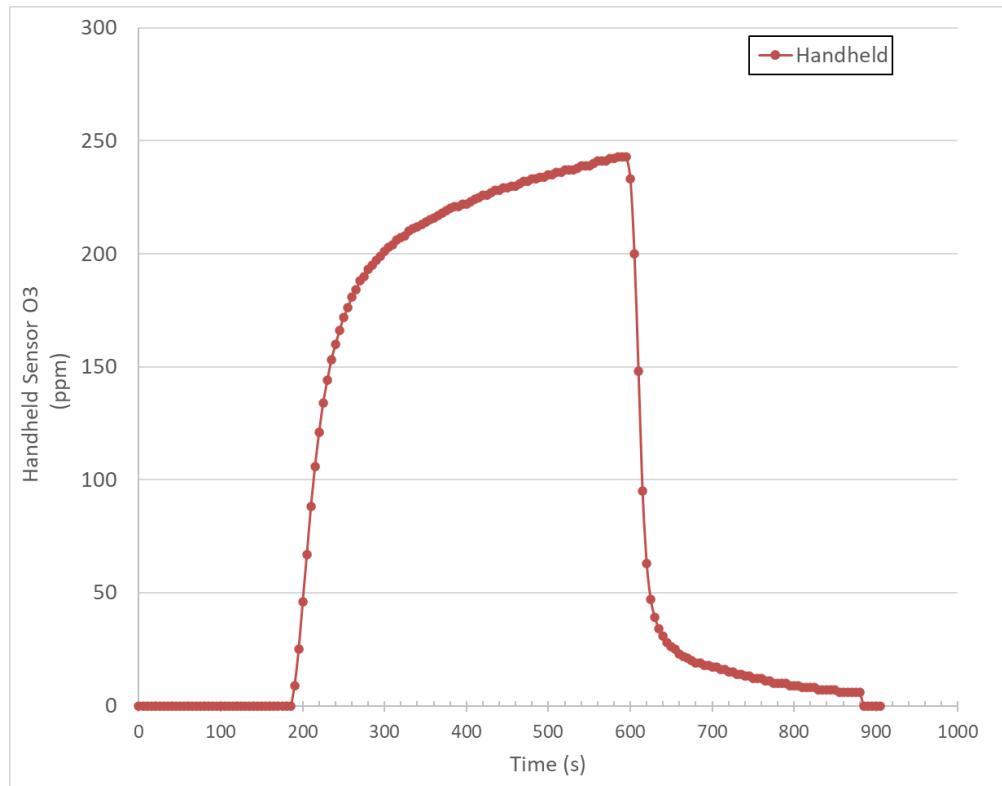


Figure B-42. Test 31 Handheld

Baker Botts, Sullivan and Cromwell
Ozone Level Testing Involving SoClean 2 and DreamStation 1

BakerRisk Project No. 01-09371-001-25
April 29, 2025

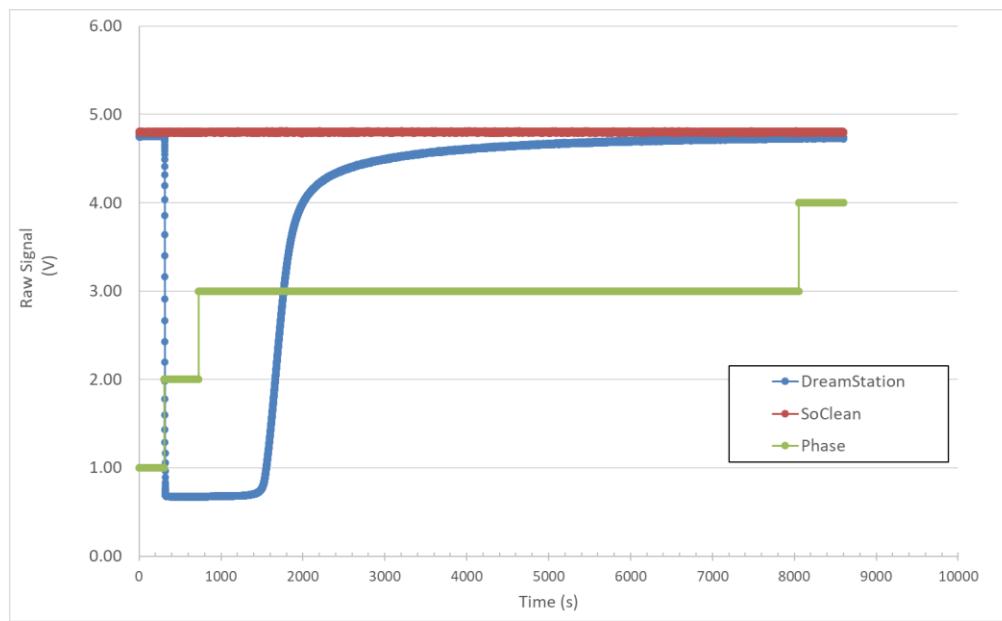


Figure B-43. Test 32

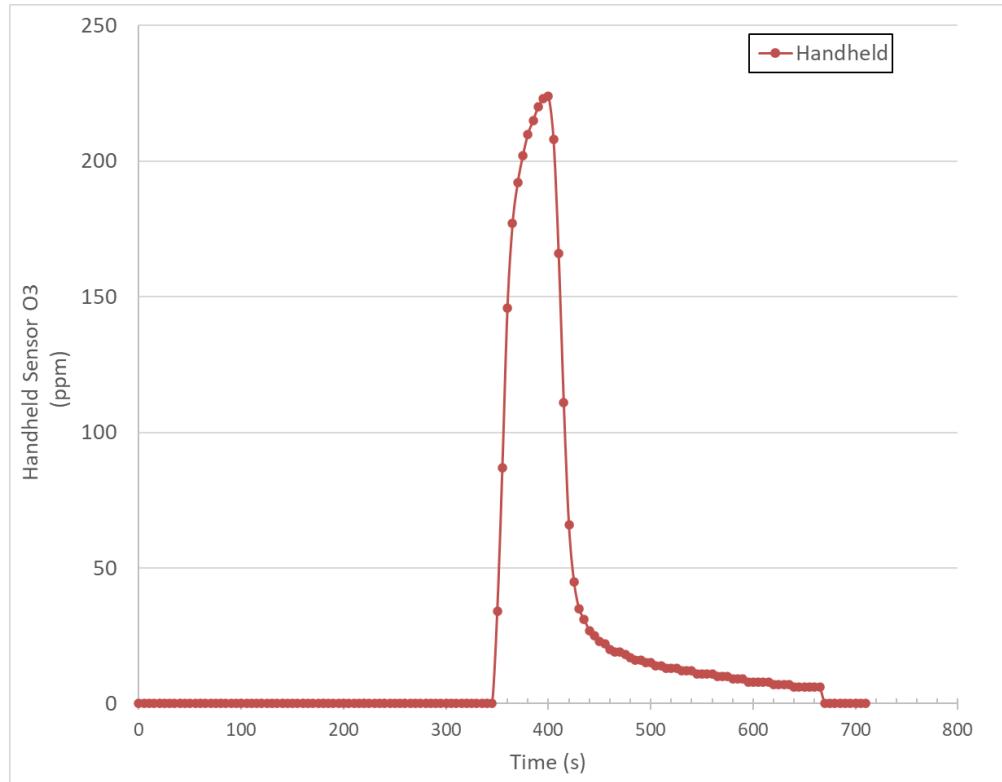


Figure B-44. Test 32 Handheld

Baker Botts, Sullivan and Cromwell
Ozone Level Testing Involving SoClean 2 and DreamStation 1

BakerRisk Project No. 01-09371-001-25
April 29, 2025

APPENDIX C. MATERIALS CONSIDERED

Devices

- Two new DreamStation 1 devices
- Two new SoClean 2 devices

Expert Report

- Brad Olsen, Ph.D., March 24, 2005

Deposition

- Mark Gavin, January 27, 2025

Other Case Materials

- Philips Respironics DreamStation Heated Humidifier User Manual, 1121984, 08/19/2016, PHILIPS_SOCLEAN-005_00049660
- SoClean 2 User Manual, SC1701_V7-Manual_USA_Final_indd 25, SoClean,_B2B_00009438
- Email from Jorge Ortiz, 9/10/2020, SoClean_B2B_00122966
- SoClean 2 User Manual, A000330-11_Rev B-SC1200 Manual_CA_040720.indd, SoClean_B2B_SoClean_B2B_00321323
- Email from Bob Wilkins, 7/23/2021, SoClean_B2B_00458473
- SoClean Durable Device Ozone Exposure Testing, Appendix M, SC1400-2VER-0052, Rev 3. 12-SEPT-2021, SoClean_B2B_00004849, pp. 2490-2549.
- Videos of air flow during use of a DreamStation 1 and during use of a SoClean 2

Publicly Available Documents

- Gas Dog GD200-O3 Portable Ozone Gas Detector, available at https://gasdog.com/portable-o3-gas-detector?srsltid=AfmBOoqy0zMGnkQ5IaV_vb5ROcaNC4zXbNBxIONm5JN9i-XAFY4wiVP-b?srsltid=AfmBOorbZNjWZmGRRrbYCKFr0_ddIJwGZv0-uj9wyAT4NMIMQywGjnT
- L-Com Ozone Gas Sensor Module MQ131, available at https://www.l-com.com/ozone-sensor-modulemq131-o3-10-1000ppm-analog-ttl-output-sraq-g015-b?srsltid=AfmBOorbZNjWZmGRRrbYCKFr0_ddIJwGZv0-uj9wyAT4NMIMQywGjnT
- Digikey 968-046 SPEC Sensor, available at <https://www.digikey.com/en/products/detail/spec-sensors-a-division-of-interlink-electronics/968-046/7689230>.
- SPEC Sensors ULPSM-03 968-046 Specification Sheet, available at https://www.spec-sensors.com/wp-content/uploads/2017/01/DGS-O3-968-042_9-6-17.pdf.
- Spec Sensors DGS-O3 968-042 Specification Sheet, available at https://mm.digikey.com/Volume0/opasdata/d220001/medias/docus/2123/968-046_8-25-17.pdf?_gl=1*bu0bbr*_up*MQ..*_gs*MQ..&gclid=Cj0KCQjws-S-BhD2ARIsALssG0aYWDE2ZxUFr6rX3IAA-gFg5SvSZVlosMvx4WPMZj8mj7zK8r3AZCUaAi1IEALw_wcB&gclsrc=aw.ds
- Safety Data Sheet for Ozone, Ozone Solutions, 10/02/2023
- Ozone Immediately Dangerous to Life or Health Concentrations (IDLH) NIOSH, May 1994.